DEC 31 1909

THE IRON AGE

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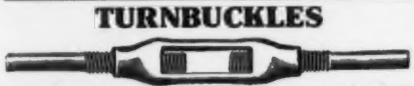

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SEE PAGE 34

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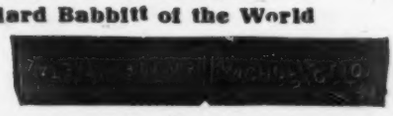

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THE IRON AGE

New York, Thursday, December 30, 1909.

The Colburn New Model Boring and Turning Mills.

An entirely new line of vertical boring and turning mills is being built by the Colburn Machine Tool Company, Franklin, Pa., to which the name "New Model" has been applied. With the exception of the method of driving the table the same features are incorporated in all the five sizes built (42, 48, 54, 60 and 72-in. swing), and a description of the 60-in. mill (Fig. 1) given in the following practically describes all the others. All sizes are built with two swivel heads, and the three smallest sizes with turret heads if desired. Fig. 2 shows a 42-in. mill with one swivel head and one turret head.

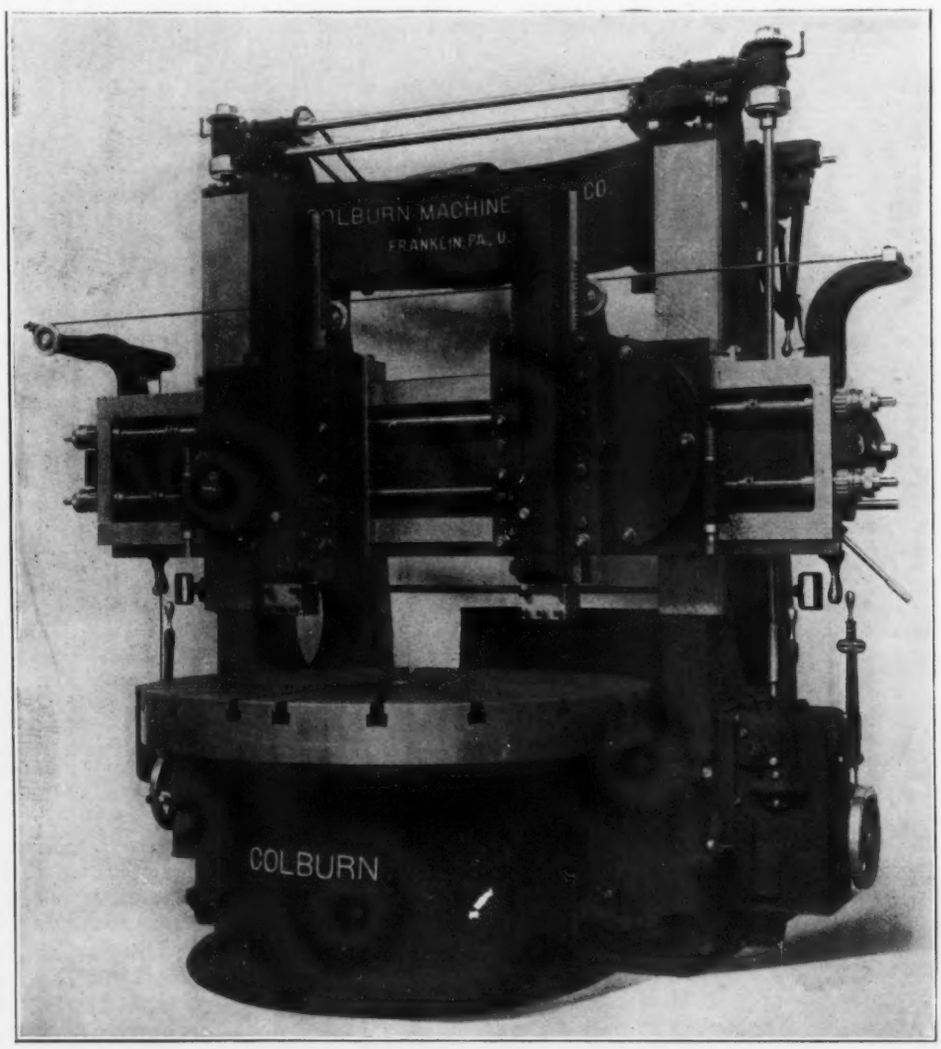


Fig. 1.—A 60-In. New Model Vertical Boring and Turning Mill with Two Swivel Heads and Plain Table, Built by the Colburn Machine Tool Company, Franklin, Pa.

The Main Spindle and Table Gear.

Referring to Fig. 3, and the line drawing Fig. 4, it will be seen that the table spindle has a massive angular thrust bearing which makes it self centering and, together with the large straight upright bearings, effectually resists vertical, angular and horizontal strains. All bearing surfaces of the spindle are lubricated from one sight feed oil cup. The proper hight of the oil is always shown by a mark on the glass. A constant flow of oil is maintained on the large conical bearing in the following manner: The lower part of the cone is immersed in a reservoir of oil and immediately when the spindle starts to revolve the oil is carried upward to the outer edge of the bearing and into an annular channel, from which it is returned through grooves to the main reservoir again. The conical bearing is thus automatically flushed with oil constantly, and the oil flows over into the upright bearings; a circular safety band of felt set into the bearing at the top retains enough oil to keep the bearing from becoming dry, even if no oil is put into the cup for a long time.

The table is driven by a spur gear of large diameter attached directly to the table itself. No lifting tendency is possible with this style of drive. An external spur gear drive is used on the 42, 48 and 54-in. mills, and an internal gear, as shown in Fig. 3, on the 60 and 72-in. mills.

The Driving Mechanism.

The drive is from five-step cone pulleys of large dimensions, thence through the speed box, containing the back gears and positive clutches, which are con-

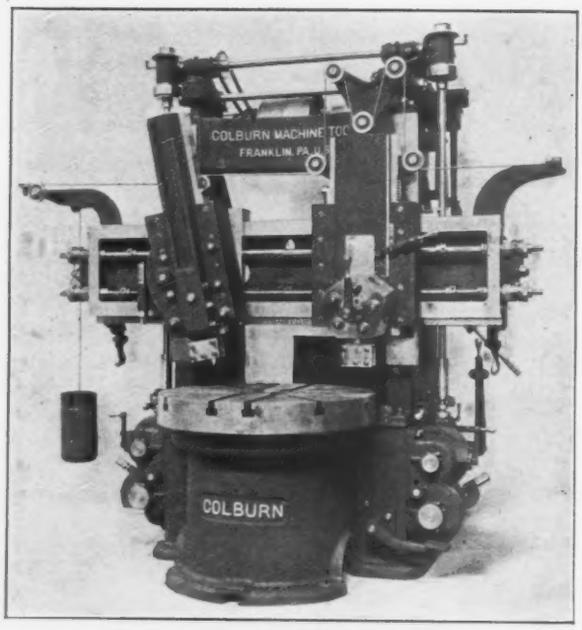


Fig. 2.—A 42-In. New Model Vertical Boring and Turning Mill with One Swivel Head and One Turret Head and Plain Table.

stantly immersed in a bath of oil. The back gears are engaged and disengaged by positive clutches inside of speed box and operated by the lever A, conveniently located at the side of the machine (as shown in Fig. 5). Five speeds are obtained with the back gears out, and five more with the back gears in, making 10 speeds in all in geometrical progression. The speed box when assembled is perfectly oil tight, and the proper hight of oil is shown at all times by the sight feed oil cup on the outside. All the bearings have phosphor bronze bushings, and ring oilers for additional protection against heating. The oil runs directly into the ring oiling pockets from the main reservoir (as shown in Fig. 6). By removing a plug under the sight feed oil cup the entire box can be drained dry. Should it be necessary at any time to make repairs the speed box can be quickly removed from the machine in its entirety, and every part is then easily accessible.

The Cone Pulley Mechanical Belt Shifter.

A belt shifter (B, Fig. 5) is furnished on these mills, which is so simple, effective and easily operated that it appears to offset the advantage of a single-pulley drive, particularly when the more or less complicated mechanism and multiplicity of parts of the latter is considered. By means of this shifter, operated entirely with one hand, the belt can be changed from one step of the cone pulley to another very rapidly and without injuring the belt. In actual operation the entire range of speeds obtained with the cone pulleys, from the slowest to the fastest and back again, stopping momentarily on each step, has been made in eight seconds. By changing the back gear lever, A, which is in close proximity to the handle which operates the belt shifter, another run of five additional speeds is obtained. A speed index plate located on the housing directly above the back gear lever A indicates the step on the cone pulley for the belt, and the position of the clutches inside of the speed box corresponding to each speed of the table in revolutions per minute.

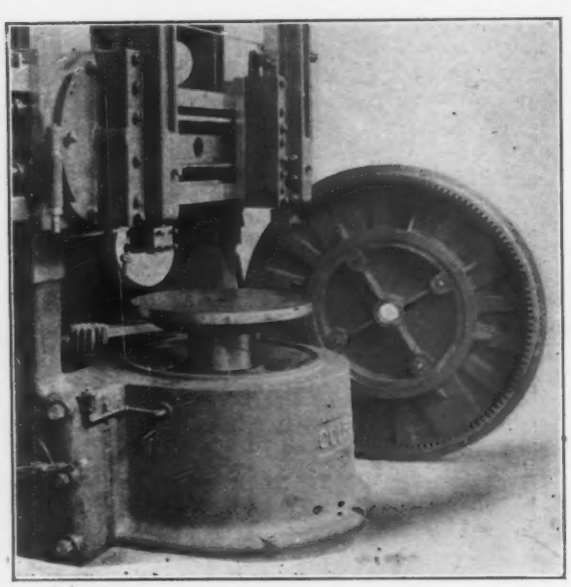


Fig. 3.—Detail of the Table Spindle Bearing and Internal Gear Drive as Used on 60-In. and 72-In. New Model Mills.

The Countershaft.

The countershaft is attached directly to the upper part of the housings by brackets having ring oiling bearings and thus becomes a part of the machine itself. It carries the upper cone pulley and tight and loose pulleys. The loose pulley is self-oiling, with bronze bushings, and is made smaller than the tight pulley, so that the strain of the belt is removed when the machine is not running. The belt from the line shaft can be shifted, thus starting or stopping the machine from either side of the mill, by a horizontal rod having a spade handle at each end. This rod connects with a mechanism for shifting the main belt running to the line shaft.

The Foot Brake.

To enable the operator to stop the machine with the table in any desired position, a friction brake is

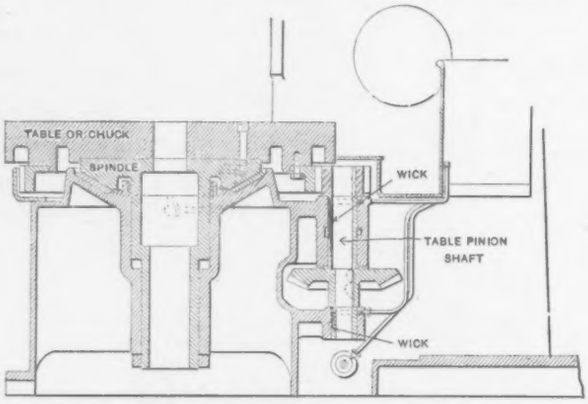


Fig. 4.—Vertical Section Through the Table Drive.

furnished, which is operated by a foot treadle placed within easy reach at the operating side of the machine. The brake is applied to the inside of the lower driving cone pulley by a taper friction with three hard maple shoes or wedges, B, Fig. 7. These wedges are specially treated by being boiled in parafine. The conical type of friction prevents distorting the bearings and, operating directly upon the prime mover, all shock and jar is eliminated, and the braking effect is instantaneous. In actual operation the mill can be stopped and started, all the table speeds changed, back gears thrown in and out and the foot brake applied without the operator leaving his position at the side of the machine. In operating the mill it is not necessary to go around back of the machine.

The Cross Rail, Saddles, Swivels, and Rams.

The cross rail is of box type, with deep arched back, and is of extra massive proportions. It is raised and lowered by power. The saddles, as shown in Fig. 8, are mounted on the cross rail and have unusually long and liberal bearing surfaces. Adjustable taper gibs compensate for wear. The swivels are of large diameter, with broad bearing surfaces, and the metal over the T-slots is extra heavy, to withstand the strain of five large clamping bolts. Angular adjustments are

made by a worm and gear, which also acts as a positive locking device, making it impossible for the heads to accidentally fall over sideways when the clamping bolts are released. The rams, A, Fig. 7, are very massive and have steel racks set into their sides. Cored openings extend clear to the top, so that extra long boring bars can be used. The rams rise within the guides, so that the bottom of the tool holders will be above the lower edge of the cross rail.

Feeds.

The feeding mechanism for each head is contained in a separate case, one on each side of the mill. By turning the hand wheel one revolution five changes of feed are obtained. A movement of the multiplying lever changes the combination of gears and another revolution of the hand wheel gives five more changes, making 10 in all. The vertical feed shaft extending upward from each feed case engages with mechanism on each end of rail, which conveys motion to the horizontal rods and screws in the cross rail, which operate the heads vertically and horizontally. The usual slip gears on the ends of the rods and screws are eliminated and quick adjusting positive clutches are substituted, shown at D in Fig. 7, which enable the operator to instantly change the feed from vertical to horizontal and vice versa. Either feed can be reversed instantly by the feed reverse lever shown at each end of the rail.

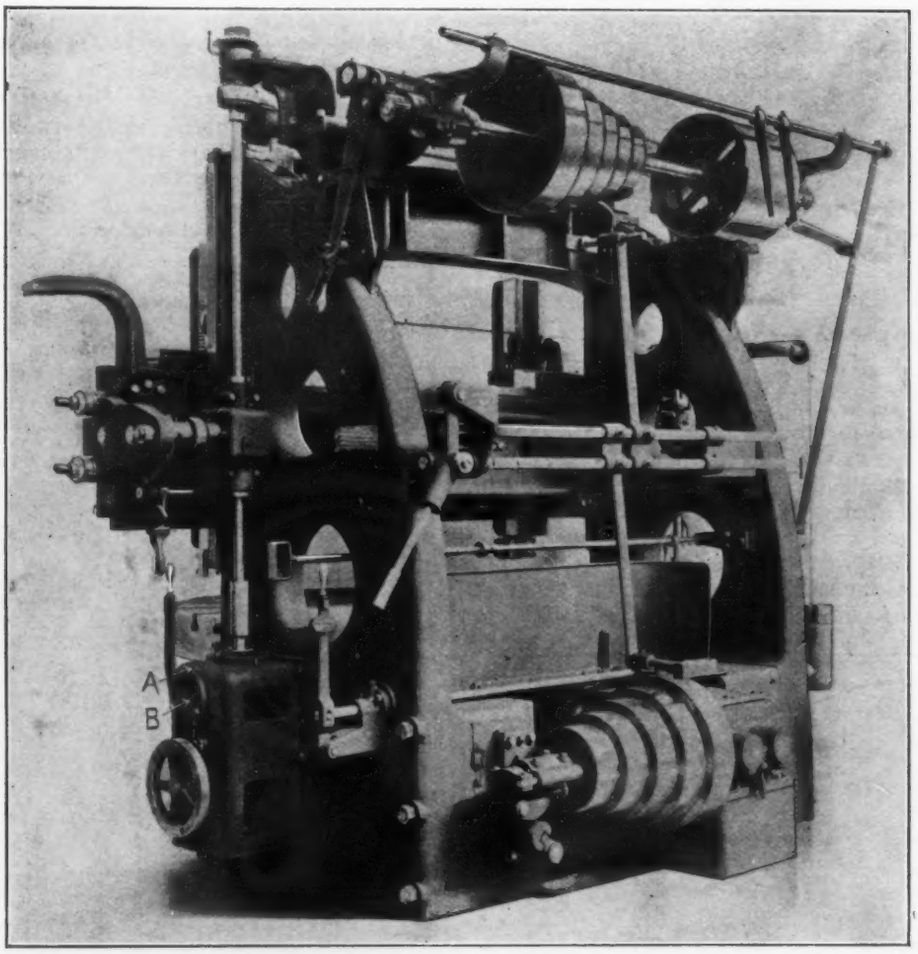


Fig. 5.—Rear View of a New Model Boring Mill, Showing the Main Drive, Mechanical Belt Shifter for the Cone Pulleys, Safety Shear Pin Device, &c.

The Power Rapid Traverse.

Rapid traverse of the tools, horizontally, vertically and in angular directions is obtained from the same vertical shafts as the feed; the manipulation is by a vertical lever attached to the front of the feed case, which may be seen in Fig. 5. This lever has two operating positions, forward and back. The gear feed is always engaged when the lever is in the back position, and the tool will feed in the direction determined by the position of the feed reverse lever at the end of the cross rail.

The rapid traverse is always engaged when the lever is in the forward position, and the tool will travel rapidly in the opposite direction from the gear feed. It is impossible for the operator to throw the rapid traverse in the wrong way, and there is no chance for an accident to occur. To illustrate: Suppose the tool was feeding horizontally along the rail taking a cut on a piece of work. Having reached the end of the cut, say, with the tool up against a shoulder, the operator now desires to disengage the feed and return the tool to the starting point again for a finishing cut. He simply pulls the rapid traverse lever forward, and does not have to stop and think which way to pull it, as there is only one direction in which it can be moved. It makes no difference whether the tool is feeding to the right or left, horizontally, or up or down vertically, the same lever controls the feed and the rapid traverse in every case and pulling the lever always throws the gear feed out and the rapid traverse in, thus reversing the direction of the travel of the tool. This arrangement of gear feed and rapid traverse simplifies the whole process of rapid manipulation of the tools, and makes a safety device which is not only theoreticlly but practically fool proof.

The motion for the rapid traverse is obtained from the horizontal shaft at the top through friction cones having cork inserts, shown at C in Fig. 7 on the upper ends of the vertical feed shafts. The rapid traverse in connection with the final adjusting collars does away with the necessity of hand cranking, although the ends of the rods and screws in cross rail are squared so that a crank can be used in an emergency or when preferred.

Final Adjusting Collars.

Although the rapid traverse is an indispensable feature, enabling the operator to quickly move the tools in any direction, it does not allow a fine adjustment to be made. To accomplish this it has usually been necessary to go to the end of the cross rail and make the final adjustment by a crank handle. This is unnecessary on the Colburn New Model mills. Both feed screws and rods in the cross rail are splined and each has a capstan collar slidably fitted thereto with keys

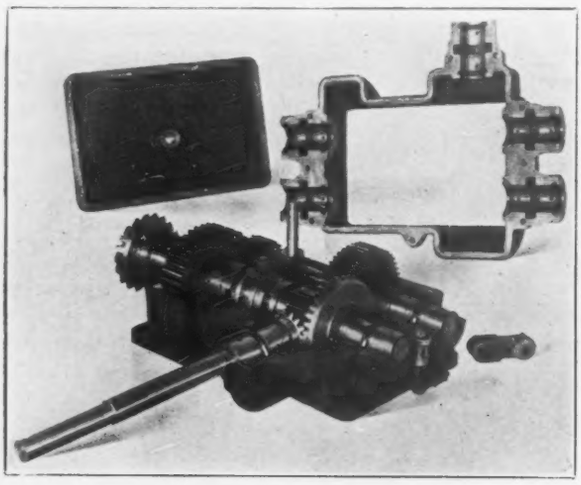


Fig. 6.—Speed Box of the New Model Boring Mill, Showing Internal Mechanism and Ring-Oiling Bearings.

which fit the spline, so that by turning the capstan collars with a small lever furnished for this purpose the rods and screws are turned also. With this device the operator can stand close to his work, as shown in Fig. 9, and by placing the capstan collars in the most convenient place, make the finest adjustments of the tools in any direction without leaving his position. When the heads are moved out on the end of the cross rail these collars slide back behind the heads, as shown

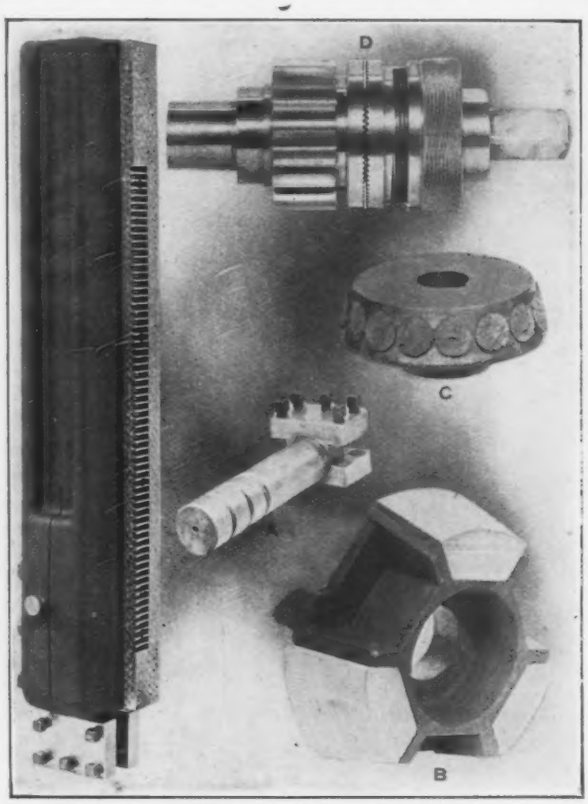


Fig. 7.—Details of Parts of a New Model Boring Mill. A—Right-Hand Ram and Tool Holders; B—Friction Cone Used on the Foot Brake; C—Friction Cone with Cork Inserts Used on the Power Rapid Traverse; D—Quick Adjusting Feed Clutches Used on the Ends of Both Feed Rods and Screws in the Cross Rail.

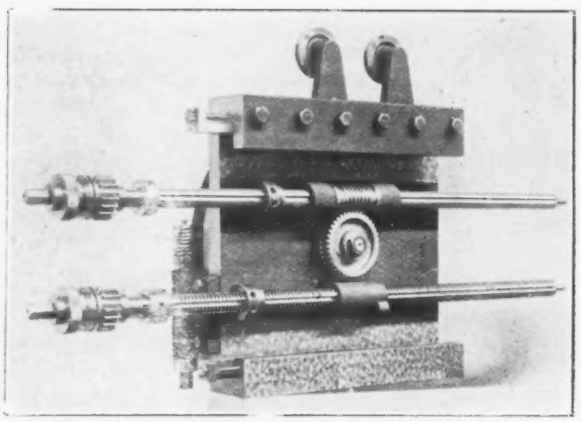


Fig. 8.—Rear View of the Saddle and Swivel Head.

in Fig. 8, and it is not necessary to make the rails longer on account of them.

The Safety Shear Pin Device.

A safety shear pin device placed on the rear of each end of the cross rail prevents injury to the feed mechanism in case the heads are accidentally run together or from other causes. This device is shown in Fig. 10 in position and also taken apart. The horizontal

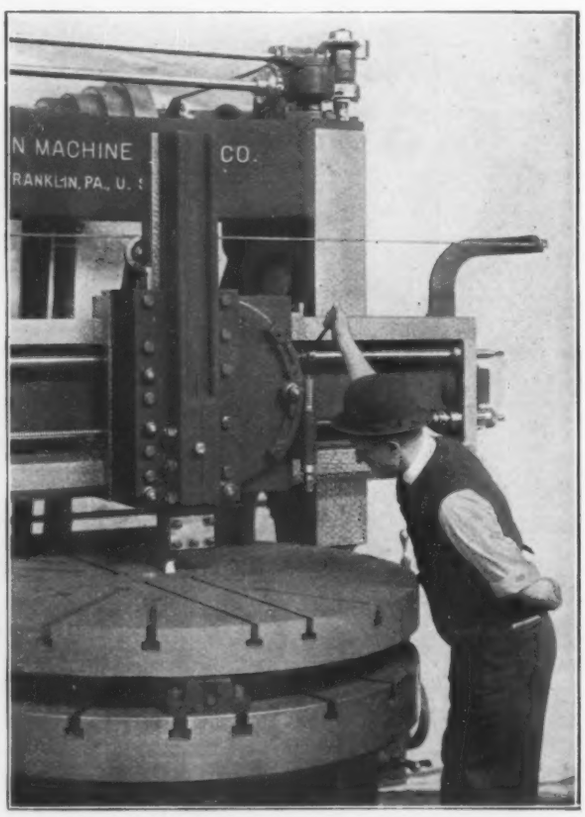


Fig. 9.—Operation of the Final Adjusting Collars in Making Vertical and Horizontal Adjustments of the Cutting Tools.

shaft in the foreground transmits the motion of the vertical feed shaft through bevel gears to the train of spur gears at the end of the rail and thence to the heads. This shaft is made in two sections with a little flange coupling on the ends adjoining each other. Motion is transmitted from the driving end of the shaft to the driven end by a small pin, which passes through each flange of the coupling. Any abnormal strain on the feeding mechanism in excess of that necessary to take the heaviest cuts will shear this pin off and thus protect the gears and mechanism from breakage. When the pin shears one section of the coupling is turned half around until the slots are opposite the broken pins, which are then readily removed, as shown in Fig. 10. The couplings are then turned until the holes are in line again, and a new pin is in-

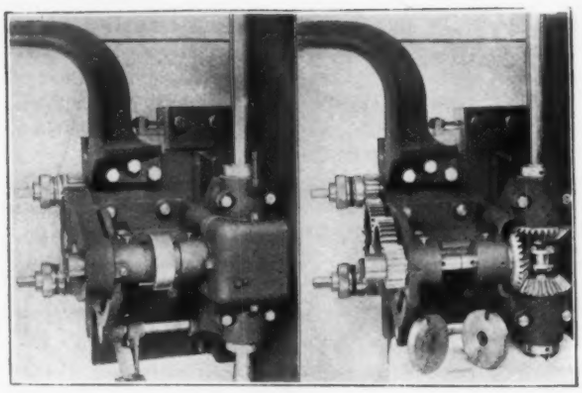


Fig. 10.—Two Views of the Safety Shear Pin Device Which Protects the Feed Mechanism. At the Left the Couplings Are Turned Half Way Around with the Slot Opposite the Pin to Facilitate its Removal; at the Right the Couplings Are Removed from the Shafts and the Shear Pin Withdrawn.

serted and the mill is ready to run. The whole operation of taking out the old pin and putting in a new one only takes a few seconds. There is nothing about this device to adjust or to get out of order. A supply of pins is furnished with each machine and when used up new ones can readily be made from ordinary wire nails.

The Thread Cutting Attachment.

When cutting threads the feed change hand wheel is set so that the vertical feed shaft and table revolve in unison. A single tooth clutch on the lower end of this shaft insures the threading tool always catching the thread in taking successive cuts, and the rapid traverse device is used to return the tool quickly to its starting point.

The thread cutting attachment is not furnished regularly, but can be put on at any time. It is attached to the bracket on the end of the cross rail, and is always used for the right hand head. Change gears regularly allow any lead to be cut from 2 to 14 per inch. For drum scoring special arrangements are made which allow leads as coarse as one turn in 2 in. to be cut as readily as the finer pitches.

A constant speed motor is recommended for these mills, since the mechanical belt shifter and clutches in the speed box give all the changes of speeds desired. The motor is mounted on a bracket at the rear, and is belted to the pulley on the countershaft; the slack of the belt is taken up by an idler. To enable the operator to stop and start the mill without stopping the motor, a clutch pulley replaces the regular tight and loose pulleys, and is operated by the same levers with handles on both sides of mill. The arrangement of motor drive is clearly shown in Fig. 11.

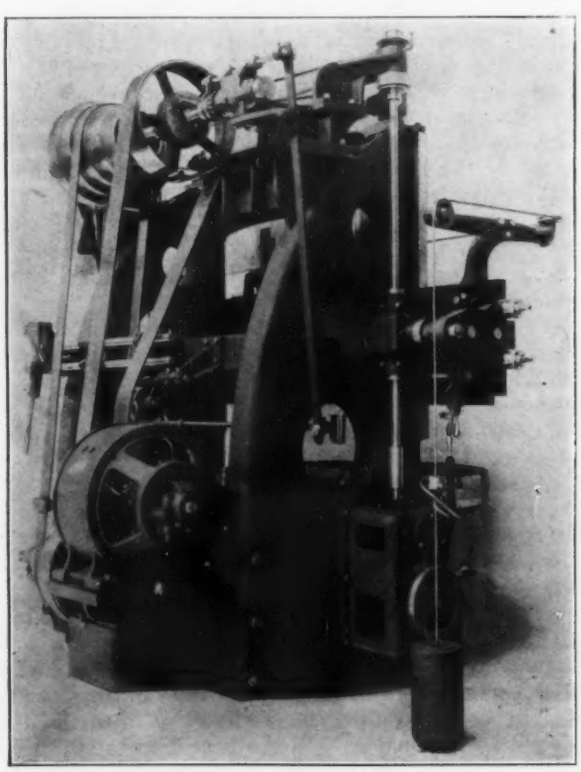


Fig. 11.—Constant Speed Motor Drive as Applied to 54, 60 and 72-In. New Model Boring and Turning Mills.

The Colorado Fuel & Iron Company.

The Colorado Fuel & Iron Company has issued its full report for the year ended June 30, 1909. The earnings and expenses in detail for the past two years show as follows:

Earnings.

	1909.	1908.
Iron department	$12,058,228	$13,175,747
Industrial department	7,889,910	8,486,085
Denver retail department	396,492	438,048
Totals	$20,344,630	$22,099,880
Operating Expenses.		
Iron department	$9,952,935	$11,342,580
Industrial department	6,894,936	7,571,136
Denver retail department	379,930	408,348
Totals	$17,227,801	$19,322,064

Production figures (in tons of 2000 lb.) for the year compare as follows:

Fuel department:		
Coal	4,094,351	4,276,095
Coke	645,544	789,989
Iron department:		
Iron and steel	1,682,794	2,077,231
Iron ore	580,784	647,270
Limestone	363,975	391,128

The consolidated balance sheet of the Colorado Fuel & Iron Company and its subsidiary companies, based on the appraisement of the property, as of June 30, 1909, is as follows:

Assets.

Iron ore, coal, limestone lands, &c.	$58,335,250
Equipment at steel plant, coal mines, ovens, &c.	27,696,024
Railroads	5,791,583
Cooperage plant	20,254
Timber lands, franchises, buildings, &c.	34,005
Inventories	2,616,335
Accounts and bills receivable	3,174,492
Cash	2,440,974
Stocks and bonds	201,784
Cash held by trustees	46,628
Reserve funds	170,339
Accrued interest on securities	4,299
Royalties paid in advance	24,508
Total	$100,556,475

Liabilities.

Common stock	$34,235,500
Preferred stock	2,000,000
Funded debt	42,823,000
Accounts payable and pay rolls	1,202,756
Accrued bond interest not due	863,107
Accrued taxes not due	113,500
Fund for fire insurance	10,285
Net appreciation from 1880 to 1909 on iron ore and coal properties (developed and undeveloped), equipment, at mines, steel and other plants, railroads, rolling stock, &c.	19,308,327
Total	$100,556,475

The report proper shows that the company during a year of severe business depression and small volume of business earned a surplus over all fixed charges amounting to $858,375.

President J. F. Welborn presents a cheerful forecast for the fiscal year 1910, so that the surplus for the current year should be very much better. The executive officers decided early in the present year to have an appraisement made of all the mines, lands and property of the company and its subsidiaries, regardless of the original cost or book values. As late as 1900 the iron ore properties developed showed but about 6,000,000 tons, while in 1909 there is developed more than 35,000,000 tons. Estimates made by competent experts of the company's undeveloped iron properties give a tonnage which, with that already developed, is sufficient to supply the steel plant, running at its present capacity, for 50 or 60 years at least. The development of the coal and coke properties during the same period of years shows a large increase in tonnage over former estimates. The estimated value of these properties by experts is more than that now placed upon them and shown in the foregoing balance sheet.

The Bay State's Low Cost Life Insurance.

A Statement of What Savings Bank Life Insurance Has Accomplished in Massachusetts.

It is now some months since *The Iron Age* published an authoritative statement* of the details of the Massachusetts movement for wage earners' insurance to be offered at actual cost to the insured, a scheme which the American Federation of Labor approved at the Denver meeting a year ago and which has attracted a great deal of attention and interest in other quarters. The value of the plan as a theoretical proposition then looked to be undeniable to leaders of organized labor, just as it had seemed incontestable to the legislators of the Bay State who were called upon to consider it in the spring of 1907.

A statement can now be made of the first year's accomplishment of the savings bank insurance system in practical operation in Massachusetts.

Two Savings Banks Try the Plan.

1. The movement began with the publication in September, 1906, in *Collier's*, of an article by Louis D. Brandeis of Boston, entitled "Wage Earners' Life Insurance," which set forth the abuses of the industrial insurance system and proposed as a remedy the establishment of an insurance department in connection with the savings banks. A plan for legislation of this character was submitted to the Recess Insurance Committee appointed by the Massachusetts Legislature of 1906. This plan was unanimously recommended by that committee to the Legislature of 1907.

The savings bank insurance and annuity bill was passed June 26, 1907. The trustees of the General Insurance Guaranty Fund, who exercise general supervision over the system, were appointed in July, 1907. The State actuary was selected by the trustees in October, 1907. The large amount of work required of the State actuary and State medical director before the system could be put into operation delayed the opening of the insurance department of any bank until the end of June, 1908, when the Whitman Savings Bank established its insurance department. Even then the preliminary actuarial work had only been in part performed, and it was not until some months later that the system was in what may be called working order. The People's Savings Bank of Brockton opened its insurance department November 2, 1908.

Financial Showing of the First Year.

2. The financial year of the savings banks begins November 1. The first year, therefore, of the savings bank insurance system in operation closed October 31, 1909. The report showing the operation of both the Whitman Savings Bank and the People's Savings Bank of Brockton has just been made, with the following result:

a. The aggregate insurance of the two banks outstanding at the end of the year (not including annuity or pension policies) was about $1,000,000, the policies being 2521 and averaging $393.79.

b. The insurance departments earned, after setting apart the full legal reserve, calculated on the most conservative basis, and in addition an amount equal to 4 per cent. of the premiums to the trustees of the General Insurance Guaranty Fund, and paying interest at the rate of 4 per cent. on the special guaranty fund of $25,000 for each bank, a surplus from which they have declared payable to the holders of all of the monthly premium policies a dividend of 8 1-3 per cent.

For the payment of this dividend only 25 per cent. of the surplus profit earned is required. The remaining 75 per cent. of the profits is set apart as a surplus guaranty fund, in addition to the legal reserve and the contribution to the General Guaranty Fund referred to above. Of the expenses of the insurance department during the past year, over two-thirds has consisted of medical fees. The percentage of these to premiums is, of course, unusually heavy in the first year. The State actuary believes that when the system is in full operation the dividend on the monthly premium policies will be much larger than 8 1-3 per cent., and that a dividend of 20 per cent. may reasonably be expected.

A leaflet relating to this dividend has been issued from the State actuary's office, 161 Devonshire street, Boston.

Reduced Monthly Premium Rates.

3. The present monthly premium rates are 15 per cent. less than the present industrial rates. Savings bank policies, however, being participating policies, the policyholders, even with the present dividend of 8 1-3 per cent., get a rate which is 23 1-3 per cent. less than that of the industrial companies. Putting it in the other way: The present industrial companies' rate is about 30 per cent. higher than the net savings bank rate based on this year's dividend. The rates on the quarterly premium policies of the savings banks, of course, do not show so great an advantage over that of the other companies, but the net rates are believed to be the lowest rates for policies of similar amount attainable in any legal reserve company.

4. The reduction of rates which the savings insurance banks offer has been made possible by marked changes in the system of doing business. The industrial companies through their solicitors have a house to house solicitation for business and a weekly house to house collection of premiums, the compensation of the solicitors and collectors being directly dependent upon the amount of the business written and the premiums collected. The savings bank insurance law prohibited the banks from employing paid solicitors and collectors. It undertook to substitute unpaid agencies for these, and the business actually written by the banks has come mainly through such agencies.

Industrial Insurance Companies Make Reforms.

5. The amount of business done by the savings insurance banks, and the advantage in rates now offered, will be but a very small part of the achievement of the savings bank insurance movement. Its greatest success by far has been in its effect upon the industrial insurance companies. When the abuses of industrial insurance—the terribly high cost to the policyholder, the huge expense rate and the forfeiture of policies—were called to the attention of the public, it was asserted by the industrial companies that their business was admirably managed, and that the high cost to the policyholder and the apparently onerous provisions of the policies were necessary incidents to the business. The lessening of these abuses since the savings bank system was inaugurated has been marked:

a. For a period of at least 20 years prior to the inauguration of the savings bank insurance movement there had been no reduction in the premiums of industrial policies. In the three years since the movement was started, industrial insurance companies' premiums have been reduced on an average of about 20 per cent., the first large reduction having been made as of January 1, 1907, after the plan was submitted to the Legislative Recess Insurance Committee of Massachusetts; the second, as of July 1, 1909, after the system had been put into successful operation.

This reduction will soon result in an annual saving to the working people of Massachusetts alone of $1,000,000 to $1,500,000; for the amount of industrial premiums collected by the companies in Massachusetts was, in 1908, $8,062,389. A relatively small part of the premiums of that year had the benefit of the reduced rate, but, as the average life of an industrial policy is less than four years, it will be seen that the saving to the working people resulting from this reduction in

* See *The Iron Age* of August 27, 1908, page 575.

rates in Massachusetts will, in a few years, rise above $1,000,000 annually.

The saving in Massachusetts represents, however, only a small part of the saving to the working people of America from the reduction now made. The total industrial premiums collected in the United States in 1908 was about $90,000,000. It will be but a few years when the saving effected on the volume of insurance represented by such premiums will be between $10,000,000 and $15,000,000 a year.

b. Another great change to the advantage of policyholders resulting from the inauguration of the savings bauk insurance movement is the increase of the amount payable in case of the death of the insured within the first year after the policy is written. For probably 20 years prior to the inauguration of the savings bank insurance movement the policies of the leading industrial companies provided that in case of death within the first six months only one-fourth of the face of the policy would be paid, and in case of death within the second six months only one-half of the face of the policy would be paid.

The savings insurance advocates insisted that such provisions were in effect delusive, and in view of the fact that more than one-half of all industrial policies lapse within a year, the effect was to make the industrial insurance for an appreciable portion of the average time covered by the policy not only twice as expensive as ordinary insurance, but, indeed, four or eight times as expensive.

The savings bank insurance policies provide that the full amount written in the policy shall be payable even in case of death immediately after the policy is written. Since the inauguration of the savings bank insurance movement, the industrial companies have made the full benefit of the policy payable in case of death six months after the policy is written and one-half payable in case of death within the first six months.

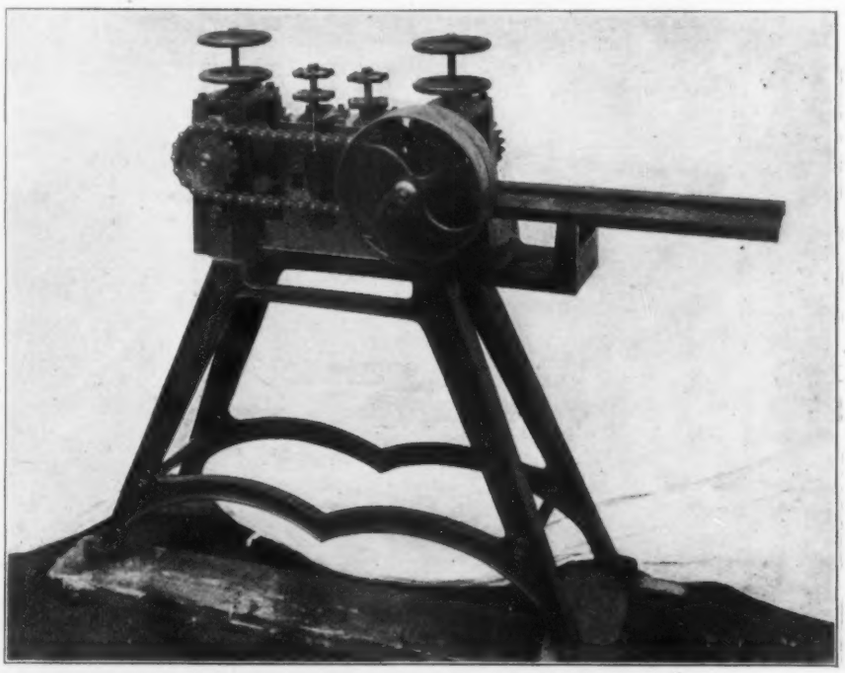
c. For the last 10 years prior to the inauguration of the savings bank insurance movement, the two leading industrial companies gave no cash surrender value until the end of 20 years after the date of the policy, and in case of lapse of policy gave a small paid up value after three years, but denied to the insured the right to extended insurance. The Massachusetts savings bank insurance act provided that no policy should be forfeited after premiums covering six months had been paid, and that, in the event that premium payments then ceased, the insured should have either a cash surrender value, paid-up insurance or extended insurance. Since the inauguration of the savings bank insurance movement the two leading industrial companies have changed their policies so as to give extended insurance after three years and a cash surrender value after 10 years.

Original Advantages of Savings Bank Insurance Have Been Lessened.

6. It is, of course, apparent that the great success of this movement in effecting such important reforms in the abuses of the industrial companies has made competition with them more difficult to establish. The advantages over them in rates and terms which the Bay State savings banks had to offer when the movement started have, so far as the policyholders are concerned, been lessened by half through the reforms which the companies have been induced to adopt. They claim now to have accepted the principle on which savings bank insurance rests—namely, that the working people should be served in respect to life insurance by a social institution rather than by an exploiting business—and have given some evidence of an intention to act upon it. Far more has been accomplished by the savings bank insurance movement within the three years than even its most ardent supporters had dared hope for.

The Perkins Tack Plate Straightener.

For straightening all sizes and thickness of tack plate, the Henry Perkins Company, Bridgewater, Mass., has brought out the machine shown in the accompanying illustration. The working features are five chilled iron straightening rolls, with a pair of feed rolls of the same material at each end of the machine. The drive is from a tight and loose pulley and sprocket chain to the rear feed rolls. The straightening rolls are driven by gears and sprockets and chain from the pulley shaft. The machine will straighten 100 strips per minute with a speed of the driving pulley of 100 rev. per min. Its weight is 650 lb.



A Machine for Straightening Tack Plate, Built by the Henry Perkins Company, Bridgewater, Mass.

The *Wall Street Journal* has most honorably made a retraction of a statement which it published September 1 criticising the Pressed Steel Car Company and its president, F. N. Hoffstot, for their action with regard to the labor difficulties then existing among the employees of the company. The *Journal* says that the references made were based upon statements in daily newspapers which purported to give the conditions at the company's plant at that time, and that after investigation it is satisfied that it was in error and that the article was unjust to Mr. Hoffstot and his company.

A Saskatchewan farmer visited Detroit, Mich., Christmas week and bought 30 automobiles for his neighbors, with one for himself. He was not an agent. He had told his neighbors he was going East, and they gave him their orders, accompanied by bank drafts. Bumper wheat crops were the explanation.

A Pratt & Whitney Vertical Surface Grinder.

The Pratt & Whitney Company, Hartford, Conn., has recently brought out an entirely new design of surface grinder which, it is stated, will grind from 12 to 20 times faster than any machine now on the market. One reason for this extremely rapid rate of production is the cup shape of the grinding wheel, which covers the entire width of the work and insures flatness, together with rapid reduction. The table is 15 x 40 in. and the working surface is 10¾ x 36 in. Straps or magnetic chucks are employed to hold the work in place on the table, which can be given any length of stroke desired up to a maximum of 36 in. Variation in the length of stroke is accomplished by adjustable dogs, which govern the travel of the table.

For grinding disks, rings and collars not exceeding 16 in. in diameter a revolving table 16 in. across is used. The drive for this table can be engaged or disengaged at will without stopping the emery wheel. A bushed hole in the center of the table is provided for inserting plugs to hold the work on the table. This is the only means required for holding the work, but a special type of circular magnetic chuck is furnished for special work.

Ten automatic vertical feeds of the slide are obtained through a ratchet wheel, each tooth of which represents a feeding movement of 0.0002 in., so that rates of feed varying from 0.002 to 0.02 in. are obtainable.

The vertical spindle is hollow, thus allowing a liberal supply of water to pass through, while the centrifugal force of the wheel, due to its high speed (1100 rev. per min.), drives the water between it and the work and thus keeps them both cool and free from dust. Independent bearings are provided for the spindle, so that it is not affected by strains from the driving belt.

Among the different kinds of work turned out by this machine are flatiron bases, circular saws, gun hammer blanks, gun ejector levers, pistol frames, knife blades, file blanks, planer knives, carpenters' planes, cam shafts and a large number of automobile parts.

The grinder is furnished for either belt drive or direct connection to an electric motor. The driving pulley is 14 in. in diameter, with a 6-in. face, and makes 425 rev. per min. If electric drive is used a 7½-hp. constant speed motor is recommended.

Large Toledo Presses.

The rapid development of a type of all steel construction which is being substituted for the former wooden construction of automobiles and motor vehicles in general renders the two powerful presses designed and built by the Toledo Machine & Tool Company, Toledo, Ohio, of particular interest. These machines which are shown in the accompanying illustrations

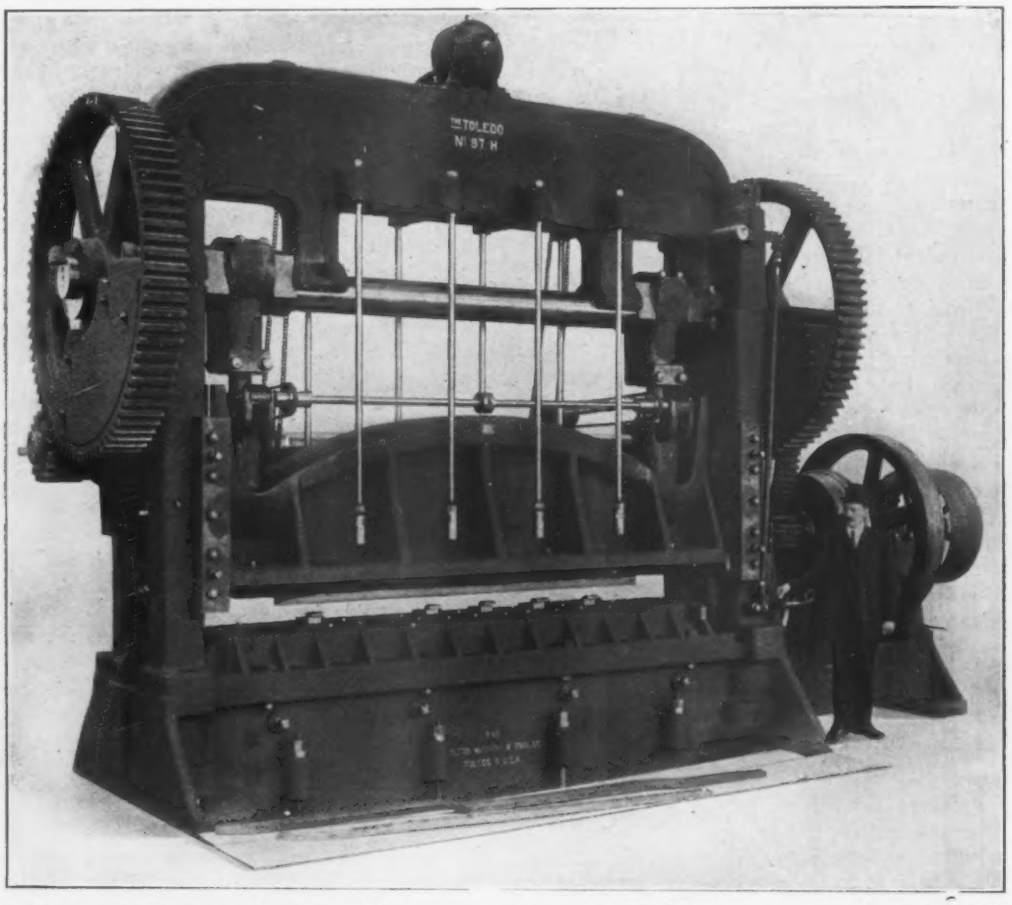


Fig. 1.—The No. 97 H Press for Automobile Frames Built by the Toledo Machine & Tool Company, Toledo, Ohio.

are intended for cutting and forming the steel bodies and frames for automobiles.

The press designed for pressing up or forming the side and cross channels for the underframe of automobiles is shown in Fig. 1. As all this work has been done heretofore by hydraulic presses, it is interesting to note how the press which makes eight strokes per minute does its work. In the illustration the dies are in position to perform the operation of making an underframe. To prevent distortion of the steel strips under the pressure applied, which is nearly 900 tons, the lower die is fitted with a pressure attachment. A novel feature of this press is a motor driven elevating attachment for adjusting the slide, which is both large and heavy. This attachment is operated by a 4-hp. motor mounted on top of the frame arch. The power is transmitted to the rear shaft by sprockets and chains and then continues over to the worm shaft engaging with worm gears on each of the right and left pitman screws. A reversible friction clutch is provided for this attachment just below the motor, and is fastened to the arch in the rear, and is therefore not visible.

This clutch is controlled by the lever and segment upon which the man's hand is resting. The press itself is fitted with twin gears on the crank shaft, which engage with pinions on a very large pinion shaft to prevent any distortion taking place between the two gears. A powerful friction clutch with hand control gives the operator control of the press stroke or movement at all points.

Fig. 2 is an illustration of a machine for pressing all parts of automobile bodies, including seats and pannels for touring cars. For this reason an unusual amount of die space is provided between the bed and the slide to accommodate the dies required for pressing up the large steel backs or seats. The stroke is 24 in., and an additional subbase or bed is provided for attachment on top of the main bed. The hight of this subbase is 40 in., so that when it is in position the distance between the bed and the slide is what it is for ordinary work. The same bed plate or bolster which is used on the main bed of the press will fit on the subbase also. This is also true of the drawing attachment used in connection with the bed for operating the drawing and forming dies required by this class of work. These attachments are made so that they may be changed from one bed to another in a small space of time.

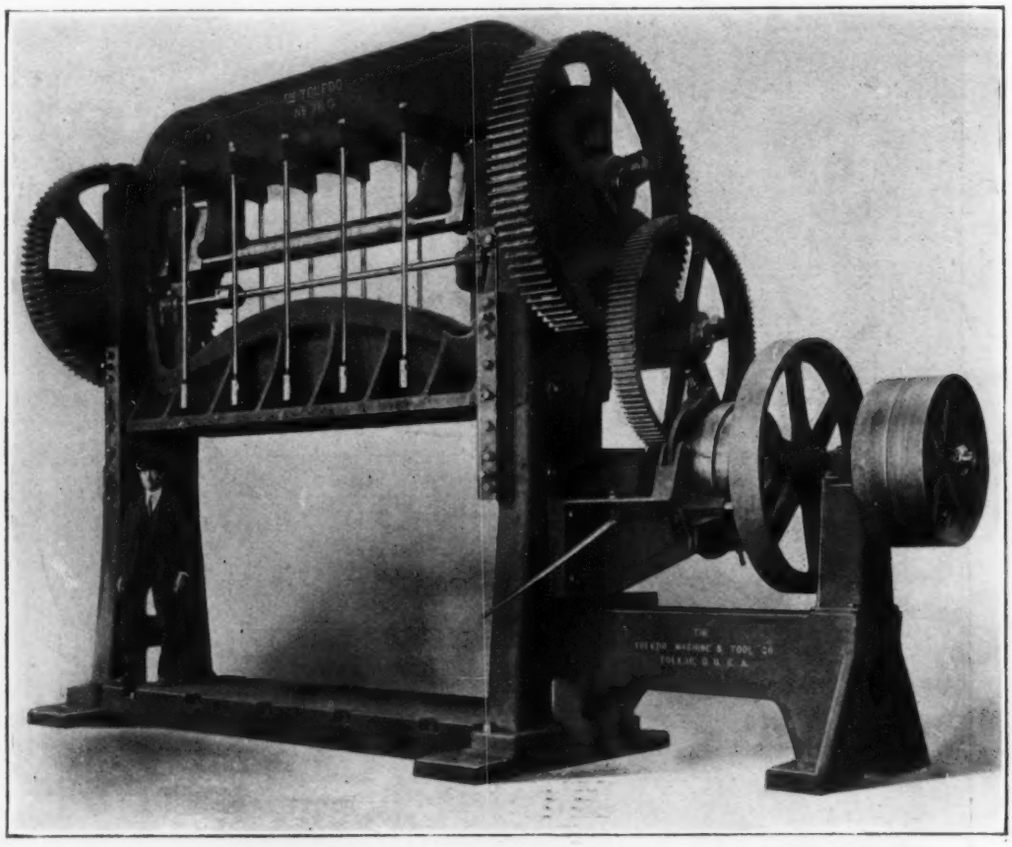


Fig. 2.—The Toledo No. 96 C Press for Automobile Bodies.

The principal dimensions of the presses are as follows:

	Fig. 1.	Fig. 2.
Weight, pounds	185,000	165,000
Stroke, inches	8	24
Ratio of gears	40 to 1	45 to 1
Width between housings	14 ft. 4 in.	12 ft. 4 in.
Floor space	9 ft. 4 in. by 25 ft. 10 in.	8 ft. 4 in. by 23 ft. 4 in.
Hight above floor, feet	15	16
Depth of bed below floor, inches	24	40
Strokes per minute	8	6

In the issue of *The Iron Age* of December 9, under the heading, "News of the Works," is was stated that "John McCullough, formerly of the McCullough Iron Works, Wilmington, Del., has been made superintendent of the Hazelton plant" of the Union Sheet & Tin plate Company, Pittsburgh. The McCullough Iron Company, Wilmington, Del., desires to state that John McCullough has not been in its employ for several years, and was never connected in any way with the management of its works. He was employed by the company for some time as a sheet mill roller, and only in that capacity.

Machinery Buyers Should Accept Agreed Deliveries.

The close of the year witnesses closer co-operation between the sales office and the shop than has prevailed at any time since orders began to come in freely. There is a notable tendency among manufacturers in the metal working industries not to take contracts exceeding the capacities of their plants for certain definite periods, and strict fulfillment of promises of deliveries at specified dates is coming to be recognized more and more among the leading firms as one of the essentials in holding the best class of trade. Purchasers, however, are not always ready to accept shipments of machinery promptly, especially where the completion of new buildings or additions has been delayed, and some sellers have been subjected to considerable embarrassment on that account, as it is difficult to hold finished tools or other apparatus in storage awaiting a customer's convenience, when identical equipment is needed elsewhere. Buyers generally, it is urged, should show a better appreciation of this fact, thereby aiding manufacturers to plan their work and deliveries with some certainty as to what will be satisfactory all around. At present, in particular, it is not easy to learn the customer's real requirements as to date of installation. Frequently, after first insisting upon delivery within 30, 60 or 90 days, as the case may be, then requesting delay in shipment (and payment), the purchaser will suddenly order the machine rushed forward, keeping the wires hot until he gets it. All of this shows poor management on somebody's part.

THE ROWBOTTOM CAM CUTTER.

Various important features have been embodied in the cam cutter built by the Rowbottom Machine Company, Waterbury, Conn., most notable of which is the use of plain flat cam forms in milling both face and barrel cams, a practice tending toward reduced costs. The work head, carrying the cam blank, is arranged to swivel 90 degrees in changing from one type of cam to the other. Another feature is the provision for a cutter slide adjustment which permits the use of formers larger than the cams to be cut, and is very desirable where there are sharp angles. The machine is of substantial proportions and pains have been taken to preserve the rigidity of the work. Barrel cams are carried on unusually short arbors, supported at the end. The spindle and face plate of both work and former heads consist of one solid forging. The heads are heavily constructed to prevent chatter. The cam spindle head is on a cross slide to permit of adjustment for depth of cut; a micrometer index permits of very accurate readings. The capacity of the machine comprises all classes of cams up to 16 in. diameter. There are four cutter speeds and four changes of feed.

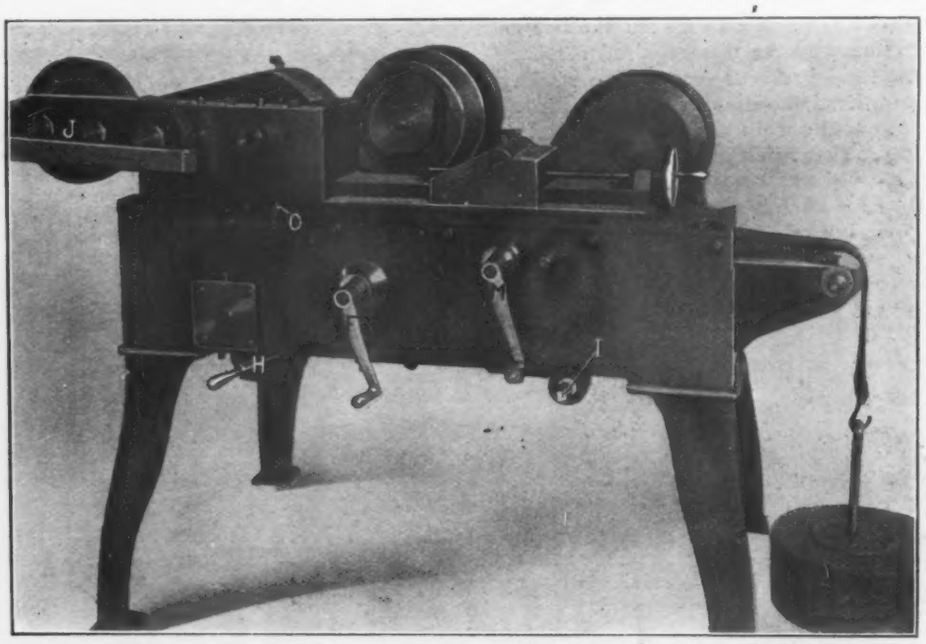


Fig. 1.—Front View.

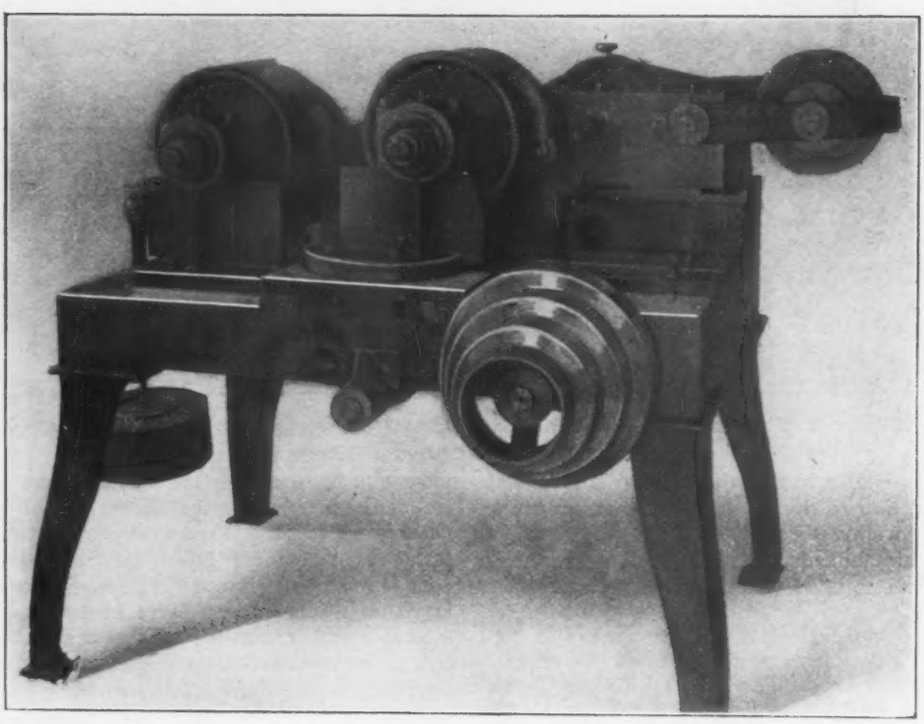


Fig. 2.—Rear View.

The New Cam Cutter Built by the Rowbottom Machine Company, Waterbury, Conn.

Fig. 1 is a front view of the cam cutter, Fig. 2 a rear view, Fig. 3 a plan view with mechanism uncovered while milling a face cam, Fig. 4 a similar view with the work head swiveled 90 degrees and a barrel cam mounted for cutting; Fig. 5 shows details of the

work head feeding and adjusting mechanism; Fig. 6 details of the cutter slide, and Fig. 7 a group of cams cut on the machine.

The machine may best be considered in two parts, the cutter slide with its drive and its adjusting slide carrying the former roll, and the cam and former heads with their feed and adjusting mechanism. The spindle carrying the former, or master cam, is fixed requiring no adjustment. The work spindle has lateral adjustment, its head being mounted on a cross slide, upon which it swivels, taper pins fixing it in either of its positions, for flat or for barrel cams. The work spindle drive is shown in Fig. 5. The feed, which is the rotation, in unison, of the work and former spindles, is from a four-step cone pulley at the back of the machine, on a cross shaft which transmits the power to the longitudinal shaft *a*, and thence through bevel gears to the cross shaft *b*, for the work head. The drive of the work spindle *c* is through bevel gears and worm and worm gears. The mechanism of the former cam spindle is the same, except that no provision has to be made for lateral adjustment or for swiveling the head. To permit of the lateral adjustment of the work to the cutter the motion is carried from the cross shaft *b* to the work spindle through the sliding bevel gears at *d*, while the bevel gear *e* engages the worm drive, an arrangement which permits swiveling the head without affecting the feed. The cross slide is operated by the handle F, Fig. 1, which revolves the screw *g*, Fig. 5; an index provides for accurate manipulation. The lever H, Fig. 1, and *h*, Fig. 6, starts and stops the feed of the machine through a clutch, *n*, Fig. 6, on the longitudinal feed shaft. The spindle at I, Fig. 1, operated by a crank handle, is used for turning the cam and former heads when the feed clutch is thrown out, making it a simple operation to set the former and cam blank in the same line. They are held on taper arbors drawn to place by a screw passing through the center of the spindle and by dogs. They may also be clamped to the face plates. In either case they are held solidly during the milling.

Details of the cutter head and slide are shown in

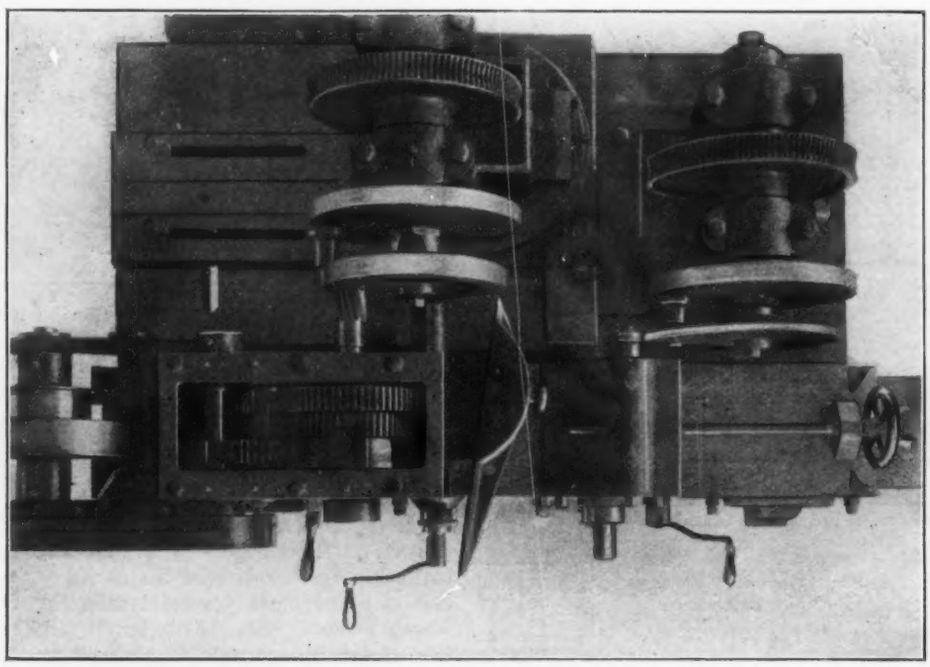


Fig. 3.—Top View with the Cutter Milling a Face Cam, Showing the Mechanism Uncovered.

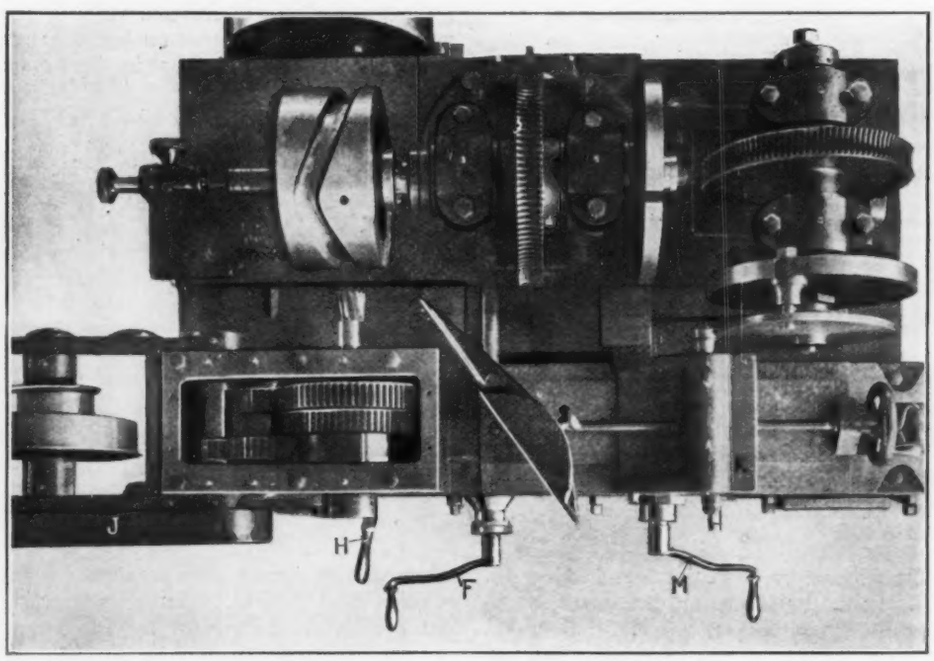


Fig. 4.—Another Top View with the Work Head Swiveled 90 Degrees and a Barrel Cam Being Cut.

Fig. 6. The drive of the spindle is from a two-step cone pulley mounted on a pivoted arm, *j*, which by its weight keeps the belt at an even tension as the slide follows the former. Two additional speeds are obtained by sliding gears in the gear box, Figs 3 and 4. The adjusting slide *k* carries the cam roll, which is

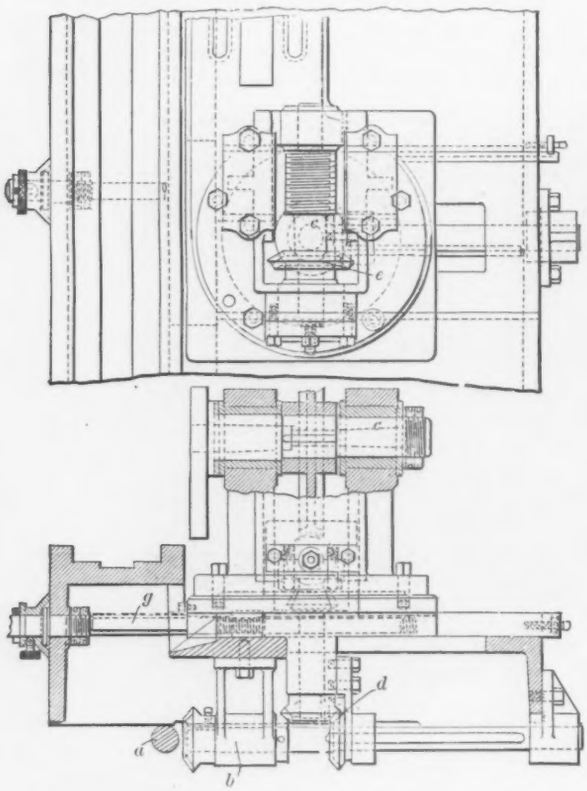


Fig. 5.—Details of the Work Head Feeding and Adjusting Mechanism.

Fig. 7.—A Group of Cams Cut on the Rowbottom Cam Cutter.

ratchet is also used to hold the slide in position with the cutter out of the way while changing the work.

The floor space required for the machine is 4 x 6 ft., and its weight 2400 lb.

The battleship Utah was launched December 23 at the New York Shipbuilding Company's yard at Camden, N. J. This is the fifth of the all big gun type of battleship for the United States Navy to be launched and is to be more powerful than the Delaware and North Dakota. She has a length on the load water line of 510 ft., or 521½ ft. over all, and a beam of 88 ft. 2 in. Her trial draught will be 28½ ft. and her displacement 21,825 tons, or 2000 tons more than the Delaware and North Dakota. She is expected to develop 20¾ knots or more an hour. There will be 10 12-in. breech-loading guns in her main armament,

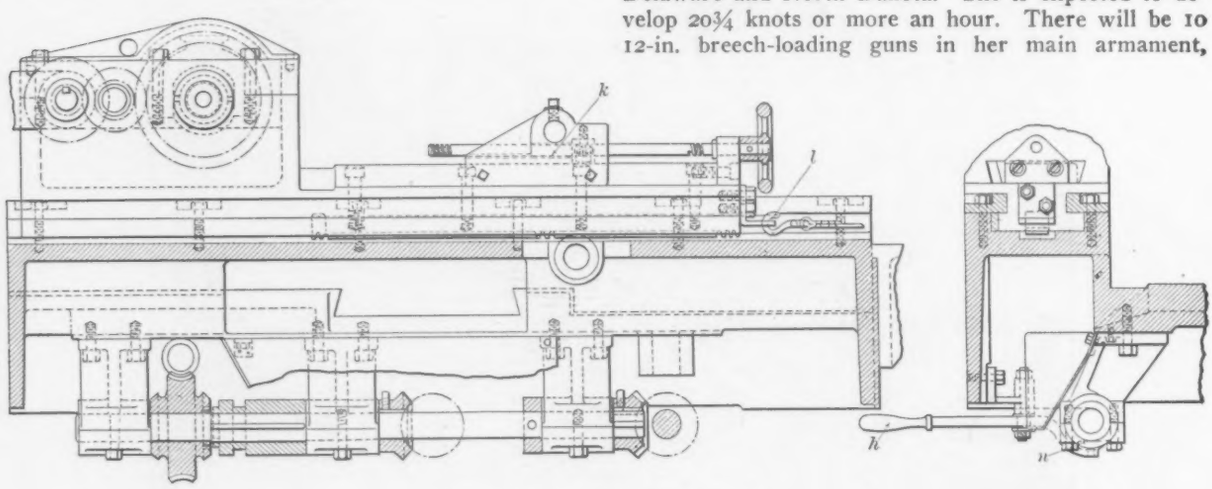


Fig. 6.—Details of the Cutter Slide.

held against the former by a weight attached to the main slide at *l*. In the half-tone engravings the same reference letters, only capitalized, are used to designate the parts. On the side of the cutter slide is a 12-in. rule, O, read by a pointer on the head. This gives accurate measurement from the center of the cone to the outer line of its groove.

In using formers larger than the cone to be milled the slide must be set to make the required correction, which is the difference between the two diameters, and this is readily done with reference to the scale, moving the slide the required distance from the zero reading, which would be employed if the diameters were equal. The ratchet handle on the spindle, M, Fig. 1, operating the main slide, is used in getting an approximate setting of the slide, while the exact setting is obtained by the adjusting slide and the scale. The

while 16 5-in. guns will be provided for defense against torpedo boat attacks. Ten Parsons turbines, six for going ahead and four for moving astern, capable of developing 28,000 hp., will be installed. Steam will be supplied by 12 water-tube boilers, and coal or oil may be used for fuel.

The Chamber of Commerce of Birmingham, Ala., will give $200 "for the best design for an emblem typifying a united people co-operating in building up a great city and expressing this spirit of co-operation among its entire citizens, as well as to foretell the future of Birmingham as one of the country's greatest manufacturing centers." The contest will close March 1. Rules will be furnished by H. W. Coffin, chairman Emblem Committee, Chamber of Commerce, Birmingham, Ala.

A New 36-In. Dreses Radial Drill.

As a first step in the redesigning of its entire line, the Dreses Machine Tool Company, Cincinnati, Ohio, has given its 36-in. radial drill press special attention, and with a careful regard for simplicity in the driving mechanism. One pair of bevel gears is carried inside of the column, thus obviating the use of the customary spur gears, one shaft and two bearings, as shown in Fig. 1. The transmission of the power to the drill spindle from the bevel gears was described in detail in *The Iron Age,* March 10, 1904. Fig. 2 is a general view of the new 36-in. machine.

The elevating screw is placed in a recess in front of the column, protecting it from damage and not impairing the swing of the machine. The lever protruding near the column through the arm operates a double friction which starts, stops, engages the back gears and reverses the spindle for tapping; any of these changes may be made while the machine is running. The lever above the one just mentioned sets the machine for tapping and also reverses the spindle at a ratio of 5 to 7, while the former lever reverses the spindle at a ratio of 1 to 4 forward and backward. A knurled screw on the main operating lever adjusts the gripping power of the driving friction clutch so that taps will not be broken off when striking the bottom of the hole.

The head is moved on the arm by a rack and spiral pinion and is clamped by the lever shown in Fig. 2 in the rear of the vertical shaft carrying the worm that drives the feed. The quick return is through the four-handled pilot wheel which automatically engages and disengages the feed. The feed

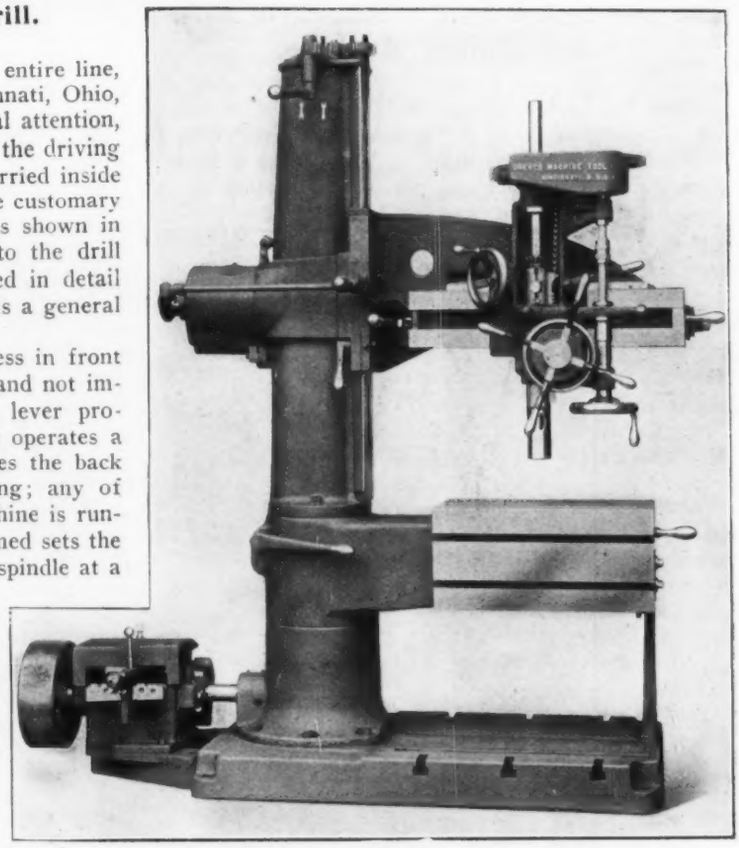


Fig. 2.—The New 36-In. Radial Drill Built by the Dreses Machine Tool Company, Cincinnati, Ohio.

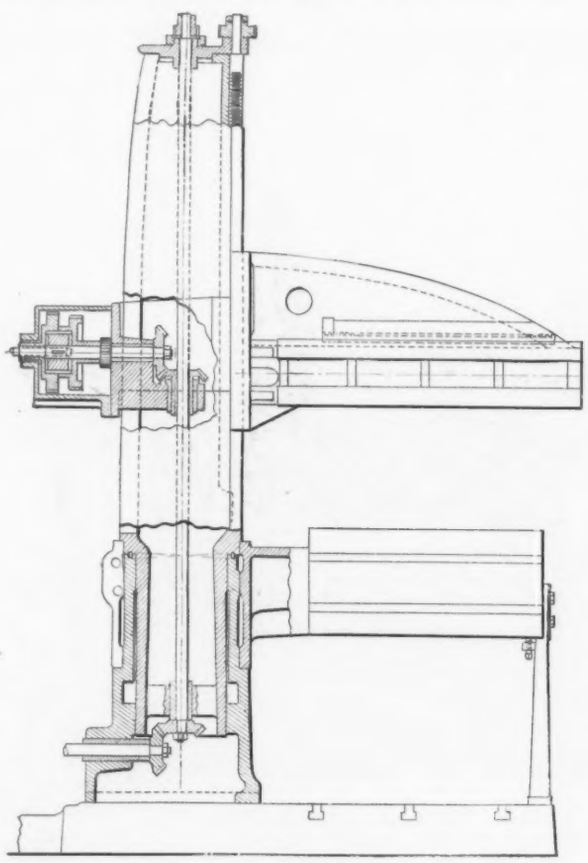


Fig. 1.—Sectional Elevation of the Dreses Improved Radial Drill.

is of the all-geared type. It has four changes which are varied by a ducking key in connection with the knurled shiftable knob on the vertical worm shaft. The spindle has an automatic stop and is graduated for depth. The teeth are cut away at the extreme end of the rack to avoid breakage when the spindle is fed to the limit of its travel.

A novel feature of the machine is the connection of the column carrying stump, column and table. The column fits into the stump and rests on rollers for easy movement. The table encircles the lower stump and a small part of the column and by depressing the lever shown in front, in Fig. 2, a screw binds all three substantially together. This lever is always in reach of the left hand of the operator, without changing his position. A tension screw below the lever always insures a working fit. The table is supported at its outer end by a stand having an adjusting screw so that it can always be kept at right angles with the spindle. The design of the speed variator was described in the earlier article before referred to.

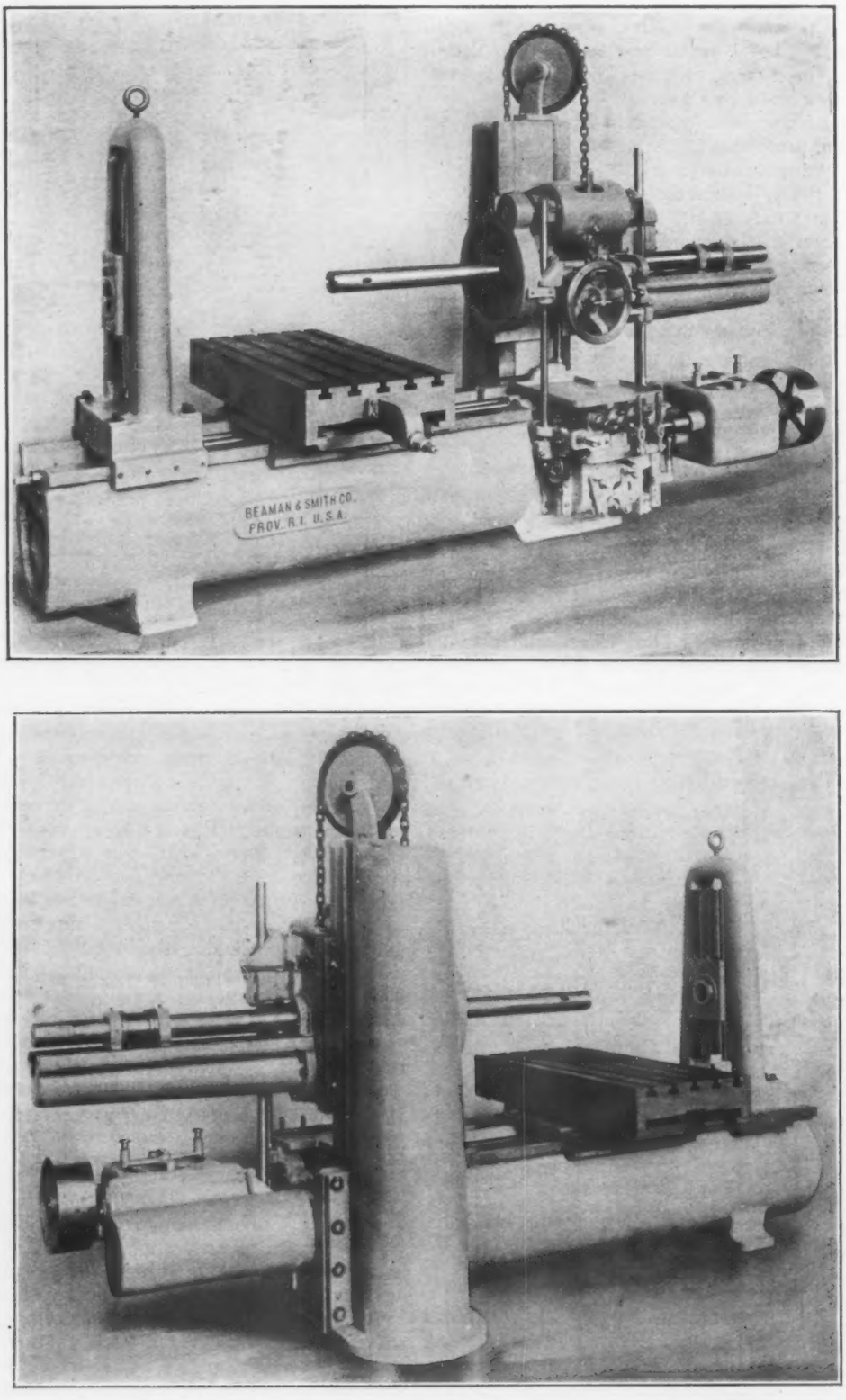
The machine is also built with a cone pulley for belt drive and for motor drive with constant or variable speed motors mounted on an attached sub-base. It drills to the center of a 73-in. circle, takes 58 in. under the spindle, and weighs about 3600 lb.

As in this country, no Christmas in recent years has found Germany in more festive mood than that just celebrated. Berlin advices state that the country is rounding out the year amid all the substantial evidences of an abundant prosperity. The merchants have done a bumper Christmas business, especially the purveyors of costly wares, such as furs, jewels and plate. The upper, middle and lower classes have vied with one another in lavish money spending.

The Colorado School of Mines, Golden, Colo., will establish an ore dressing and metallurgical experimental plant, the State having appropriated $75,000 for the building and equipment. It is announced that work on the building will begin soon. While primarily intended for students at the school, the plant will be used to test samples of ore and determine the best method of treatment.

The Beaman & Smith Standard Boring and Milling Machine.

The No. 10 boring and milling machine shown in the illustrations is of a type which the Beaman & Smith Company, Providence, R. I., will add to its line as a standard product. A noteworthy feature is the bed of cylindrical form, designed to resist the strains to which the tool is subjected on heavy work. The column is also cylindrical in shape, carrying out the lines of the bed. The work is given power cross feed in either direction on the bed, with quick cross movement, also by power, and there is power feed in either direction for the boring bar, and vertical power feed of the head for milling. All feeds are driven through a gear box, in which eight changes are obtained through a combination of clutches and sliding gears, the company's standard mechanism being employed for the purpose. By an arrangement of clutches in connection with the vertical feed shaft the several feeds are obtained, the operation being through a single lever. The feeds for drilling and boring range from 0.009 to 0.252 in. per revolution of spindle, and for milling from 0.56 to 15.7 in. per minute at any spindle speed.



Front and Rear Views of the New Standard Boring and Milling Machine Built by the Beaman & Smith Company, Providence, R. I.

Eighteen changes of speed are provided by the use of a speed box and back gears on the head. The spin-

dle, 3½ in. in diameter, is carried in a quill with tapered ends, which run in boxes of hard bronze, with take-up for wear, and are so constructed as to preserve alignment. It has No. 5 Morse taper, with driving slot along the end. There is a continuous feed of 30 in. and a total feed by fleeting of 60 in. The spindle revolves in either direction, and is driven by a 5-in. belt on a 14-in. pulley through gearing in the ratio of 1.8 to 52.5 turns of the pulley to one of the spindle, the ratio of drive increasing as the revolutions of the spindle decrease and the diameter of the work increases. The speeds range from 4.34 to 125 rev. per min.

The outer support for the boring bar has vertical adjustment by power in unison with the spindle, through a shaft and bevel gears. The outer support for the boring bar has a hole 4½ in. in diameter, and is located between uprights, affording the maximum of rigidity.

That part of the bed supporting the carriage is 20 in. wide and 6 ft. 6 in. long. The carriage has a bearing on the bed 20 x 26½ in., and has a horizontal movement of 40 in. That portion receiving the table is 20 x 36 in. The table is 24 x 48 in., and has power cross feed for milling of 36 in. That portion of the column receiving the head is 16 x 45 in. The head has a bearing upon the upright 16 x 26 in., and is counterbalanced.

The least distance from the center of the spindle to the top of the table is 3 in. and the greatest 25 in. There is a vertical adjustment of 22 in. From the spindle driving gear, which is 18 in. in diameter, to the outer support, the least distance is 27 in. and the greatest 5 ft. 6 in. The countershaft has one tight and two loose pulleys, and should run at 230 rev. per min. The weight of the machine is about 11,000 lb.

A Steam Turbine Electric Locomotive.

Many propositions to electrify existing steam railroads have failed of adoption because of the cost of conversion and the expense of maintenance after the change was made. Attempts have also been made to introduce independent self-generating electric units which could operate over existing lines without requiring any installation of electrical equipment on the right of way itself. The motor car containing a gas engine driving an electric generator is a good example of the latter.

Announcement was made in the address delivered at the opening session of the Glasgow University Engineering Society by Hugh Reid, the honorary president, of the construction of a new type of locomotive at the works of the North British Locomotive Company in that city which may result in the general application of the turbine to the railroad engines of the world. Mr. Reid describes the locomotive as the first steam turbine electric locomotive. Probably the most notable attempt previously made to introduce independent self-generating electric units was the construction of the Heilmann steam electric locomotive, built in 1894, whose trial trip was described in *The Iron Age*, June 7, 1894. The new engine, although a development of the Heilmann idea, has, it is stated, a vastly different and much more practical basis for its foundation.

An ordinary locomotive boiler fitted with a superheater is used to generate the steam, which is led to a turbine of the impulse type making 3000 rev. per min. directly coupled to a direct current variable voltage dynamo. The generator supplies energy at a potential varying from 200 to 600 volts to four series-wound railway motors with the armatures built on the four driving axles of the locomotive.

The exhaust steam from the turbine passes into an ejector condenser and eventually to the hot well in company with the circulating water of the condensing system. The steam turbine, unlike the reciprocating engine, requires no internal lubrication, and the water of condensation is consequently free from oil and may be returned direct from the hot well to the boiler by a feed pump. The water evaporated is therefore returned to the boiler continuously and the supply carried in the tanks is all available for circulating water for condensing purposes. This water is circulated within a practically closed cycle by small centrifugal pumps driven by auxiliary turbines located alongside the main turbines and the dynamo.

The cycle of the condensing water is from the tanks through the first pump, next through the condenser, where the operation of condensing the exhaust raises the temperature, and then to the hot well. Leaving the hot well, it passes through the second pump to the cooler, located at the front of the engine, where it is cooled by the blast of air produced by the movement of the locomotive, aided by a fan. After cooling, the water is returned to the supply tank, thus completing the cycle.

The boiler is deprived of the usual exhaust blast that induces the draft through the firebox and tubes, owing to the condensation of the exhaust, but a small turbine fan producing forced draft supplies the deficiency. This fan is placed within the cooler previously mentioned, so that it will deliver heated air to the boiler firebox and at the same time assist the current of air through the cooler.

The electrical appliances, such as a small switchboard with recording and indicating instruments, the controller for grouping the motors in the various combinations of series, series-parallel, and parallel for different drawbar pulls, and the voltage regulator for controlling the voltage impressed upon the motor terminals and consequently the speed of the train, are all located within easy reach of the engineer.

It is stated that this idea is the outcome of much thought and experiment extending over a period of several years, and is being carried out on a large scale. The engine now in course of construction is intended for express passenger service, and it is hoped that when placed in commission a basis for comparison with the performances of reciprocating engines will be afforded. The particular points upon which information is desired are fuel and water consumption, efficiency of transformation of the energy of the steam into drawbar pull, and the relative rapidity of acceleration.

President Hyde Leaves the Whitlock Company.—At a recent meeting of the directors of the Whitlock Coil Pipe Company, Hartford, Conn., the resignation of Arthur S. Hyde as president and manager was accepted. James L. Goodwin, the treasurer of the corporation, was elected to the additional office of manager. No president was chosen. C. E. Beach was elected vice-president and John B. Murphy, secretary. The Board of Directors was increased by the addition of George H. Sage, vice-president of the Berlin Construction Company, Berlin, Conn. The remainder of the board was re-elected, as follows: C. E. Beach, E. G. Clark, S. O. Prentice, E. D. Redfield, George W. Flint, Arthur S. Hyde and Francis R. Cooley.

The Goldschmidt Thermit Company, 90 West street, New York, states that a valuable by-product is obtained in making chromium by the thermit process. This by-product is known as Corubin (registered trademark) and has proved to be one of the best abrasive materials obtainable. It is used extensively abroad in the manufacture of high grade emery wheels, emery cloth and for other purposes where a first-class abrasive is required. Arrangements have now been completed for supplying the American market with this material.

A Report on Cast Iron Test Bars.*

BY A. F. NAGLE, BETHLEHEM, PA.†

In machinery castings as well as in cast pipes, separate bars are cast and subjected to tensile or transverse stress to the breaking point, these results being used as evidence of compliance with the contract specifications. The writer has examined a large number of such test bars for castings used in the Baltimore sewage pumps and here reports the results of this examination and study. Perhaps the most important conclusion is that the test bar is not to be regarded with too much confidence as indicative of the exact strength of the casting.

All transverse bars were nominally 2 x 1 x 24 in., and were cast from two patterns in one mold, made in the same kind of sand as the main casting. The flask was inclined about 30 degrees. There was but one gate for the two bars, with suitable risers. The iron for the bars was poured from a small ladle of iron taken as near as might be from the middle of the pour of the main casting. The breaking loads were corrected for varying dimensions of the bars by the formula $W' = \frac{Wbd^2}{2}$, where b and d are the actual dimensions, W the actual breaking load, and W' the corrected load or weight. These results are used throughout this paper. The deflections were not corrected. The tensile bars, 1⅝ x 6 in., were cast upright in the same mold as the main casting, within 3 or 4 in. thereof, and connected by an upper and lower gate. The tensile bars were turned to 1½ in. diameter and threaded, and the middle portion reduced to 1.129 in. diameter, which is equal to 1 sq. in. area. Table 1 gives the results of the chemical analysis of the several bars tested.

Table 1.—Analysis of Cast Iron Test Bars.

Bars Used in I. P. Bed Plate Cast November 21, 1907, and I. P. Frame, Cast November 26, 1907, for Baltimore Sewage Pumps.

Date cast.	Total carbon.	Graphite carbon.	Combined carbon.	Manganese.	Phosphorus.	Sulphur.	Silicon.	Tensile strain.	Transverse load.	Deflection.
November 21, 1907	3.580	2.830	0.75	0.79	0.485	0.081	1.59	24,900	2,440	0.49
November 26, 1907	3.396	2.736	0.66	0.38	0.459	0.124	1.91	22,000	2,075	0.40

From August 5, 1907, to April 4, 1908, there were made 67 single tensile bars and the same number of pairs of transverse bars, and the average of the latter was used in this record. From April 4 to December 19, 1908, there were made 91 pairs of tensile bars and an equal number of pairs of transverse bars, and each piece of the pair is recorded, instead of the average. Of these 249 tensile bars and their corresponding transverse bars, 32 sets—26 flat and 6 round—were rejected for defects due to blow-holes and four tensile bars were too hard to bear threading, but the companion piece was used in this record. Of the 217 specimens here recorded, 42 are designated as abnormal, that is, the ratio between the tensile and the transverse bars was either considerably greater or smaller than the average.

By referring to Table 2 it will be seen that of the 175 specimens of cast iron running from 20,000 to 30,000 lb. tensile strength, the ratio of tensile to breaking loads is practically 10 to 1 and the deflection 0.45 in.

Table 2.—Comparison of Cast Iron Test Bars.

No. of specimens.	Limit of breaking load of transverse bars.	Breaking loads. Pounds. Transverse.	Tensile.	Deflection. Inches.	Ratio of tensile to transverse.
29	2,000 to 2,200	2,065	21,630	0.43	10.47 to 1
36	2,200 to 2,400	2,289	22,940	0.45	10.02 to 1
51	2,400 to 2,600	2,523	24,880	0.47	9.86 to 1
43	2,600 to 2,800	2,756	26,500	0.49	9.61 to 1
16	2,800 to 3,000	2,894	28,460	0.49	9.83 to 1
175	Averages.	2,383	23,732	0.45	9.96 to 1

NOTE.—Transverse bars, rough 2 × 1 × 24 in. centers; tensile bars, turned 1.129 in. in diameter (1 sq. in area).

Table 3 gives 25 abnormal cases where this average ratio is as high as 12.56 to 1, with a deflection of 0.43 in.; also 17 abnormal cases where this average ratio is as low as 7.91 to 1, with a deflection of 0.44 in. And yet the average of both normal and abnormal bars was again very nearly 10 to 1—10.07 to 1. Breaking loads, presumably alike, varied in 65 pairs of transverse bars, as follows: Out of 65 pairs, 14, 18 per cent.; 17, 5.4 per cent., and 34, less than 2 per cent. The 65 pairs of round or tensile bars gave these results: 22, 15 per cent.; 20, 5.5 per cent., and 23, less than 2 per cent.; the percentages being those of the average variation in both cases. Sixty-one other pairs of flat bars, which had only one companion tensile bar, varied in about the same ratios. Two special flat bars and two special round bars, cast in one mold, one gate and at one pour, gave variations of 12 per cent. and 7 per cent., respectively.

Table 3.—Comparison of Cast Iron Test Bars.

ABNORMAL RESULTS.

No. of specimens.	Limit of breaking load of transverse bars.	Breaking loads. Pounds. Transverse.	Tensile.	Deflection. Inches.	Ratio of tensile to transverse.
	Above 10 to 1 ratio.				
10	2,000 to 2,200	2,088	27,143	0.41	12.95 to 1
10	2,200 to 2,400	2,294	28,530	0.43	12.44 to 1
4	2,400 to 2,600	2,436	29,600	0.49	12.15 to 1
0	2,600 to 2,800	00	00	...	.....
1	2,800 to 3,000	2,890	34,000	0.45	11.76 to 1
25	Averages.	2,258	28,365	0.43	12.56 to 1
	Below 10 to 1 ratio.				
1	2,000 to 2,200	2,105	17,600	0.50	8.36 to 1
4	2,200 to 2,400	2,359	18,825	0.41	7.98 to 1
7	2,400 to 2,600	2,487	18,814	0.43	7.57 to 1
3	2,600 to 2,800	2,656	21,230	0.45	8.00 to 1
2	2,800 to 3,000	2,969	24,500	0.47	8.25 to 1
17	Averages.	2,521	19,954	0.44	7.91 to 1

In order to get some more definite information on these variations, if possible, I had a pair of transverse and a pair of tensile bars made and cast in the same mold, and while the average ratio of tensile to transverse strength was again nearly 10 to 1, as shown in Table 4, the same type of bars again varied 12 per cent. and 7 per cent., respectively. I have no satisfactory explanation for the great variations in these test bars, and we can only accept the fact that mathematical uniformity in strength of cast iron bars is not found in the present state of the art. To any one questioning the results I can only say from my own knowledge of the circumstances that the personal equation did not enter into them.

Table 4.—Comparison of Cast Iron Test Bars.

SPECIAL, TWO SETS CAST IN SAME MOLD AT SAME TIME.

No. of specimens.	Limit of breaking load of transverse bars.	Breaking loads. Pounds. Transverse.	Tensile.	Deflection. Inches.	Ratio of tensile to transverse.
1	.....	2,350	23,000	0.50	9.79 to 1
1	.....	2,100	21,470	0.45	10.21 to 1
2	Average.	2,225	22,235	0.47	10.04 to 1
217	All averages.	2,380	23,970	0.45	10.07 to 1

Careful observation of broken bars did not show that the so-called "skin of the metal" was of any appreciable thickness, and the metal was very homogeneous throughout. The tensile bars being turned, the skin, if there were any, of course disappeared. It is my opinion that the skin adds practically nothing to the strength of either transverse or tensile bars, other causes, though obscure, producing far greater deviations. Although many castings were condemned for physical defects, such as blow-holes, shrink-holes, sand-washes and shifting of cores, not a single case of cold-shut was discovered. This is a marked contrast with the writer's experience on similar work in other foundries. Excepting a number of steam valves, which were of iron too soft for their purpose, but one large

* Presented at the annual meeting of the American Society of Mechanical Engineers, New York, December 7-10, 1909.
† Bethlehem Steel Company.

casting, a discharge air chamber weighing 16,000 lb., was condemned for being of unsatisfactory iron. In this case the iron was coarse-grained and brittle, and was required to stand at least 23,000 to 24,000 lb. To remove all doubt that the test bars were truly representative of the iron in the main casting, two tensile bars were cut out of a large flange, which had been at the bottom of the mold. These, from the most favored part of the casting, as will be seen, stood but about 17,350 lb.; 90 per cent. of that revealed by the test bars. In this case there was a remarkable agreement among these pairs of bars.

$$R = \frac{3\,Pl}{2\,bd^2}$$

Table 5.—Test Bars from Condemned Casting.

Breaking loads—Pounds. Transverse.	Tensile.	Deflection. Inches.
1.968	19,800	0.35
2,019	19,000	0.50
	Cut out of flange.	
	17,000	
	17,700	

It may be interesting to apply these results to the formula for the strength of cast iron beams subjected to similar stress. The commonly used formula (Kent, page 268) is where R is called the modulus of rupture, or stress per square inch of extreme fiber.

P = load at center.

l = length in inches between supports.

b and d = breadth and depth, respectively in inches.

Making the proper substitutions, we have

$$R = \frac{3 \times 2380 \times 24}{2 \times 2 \times 1 \times 1}$$

or R = 42,840 lb. This is not the correct figure, however, for the extreme fiber stress; we know this cannot exceed the tensile strength, which we have found to be 23,732 lb. I think it is better to use D. K. Clark's formula, given on page 507 of his Engineers' Tables, &c., $S = \frac{Wl}{1.155\,bd^2}$, where S = extreme fiber stress, or tensile strength. If we use the tensile strength found in these tests as 23,732 lb., the breaking load W would become $\frac{23{,}732 \times 1.155 \times 2 \times 1}{24}$ = 2284 lb., the actual breaking load being 2383 lb. As this is within 4.3 per cent. of the average found in these tests, this formula, using the tensile strength for the extreme fiber stress, seems to me to be the more intelligible and dispenses with the "coefficient of rupture." "Mr. Barlow found by experiment that for 1-in. square bars of cast iron the breaking weight in tons [2240 lb., I presume] was expressed by the formula $W = \frac{bd^2}{l} \times 13.6$, and Mr. Robert Stephenson arrived by experiment at exactly the same coefficient." Clark, page 561. If we should substitute the value for W found in these tests we would have W, or $\frac{2383}{2240}$, = 1.064 tons = $\frac{2 \times 1}{24} \times$ a constant, or, constant = 12.77, which is within 7 per cent. of the coefficients found by Barlow and Stephenson.

Since the foregoing was written I have had the opportunity to observe two circular test bars nominally 1¼ in. in diameter by 15 in. long, with 12-in. centers. These bars were cast from two patterns in one vertical dry-sand mold and poured from a small ladle, first one and then the other, with the results shown in Table 6. The tensile bars were taken from the bottom end of the broken test bar, but I do not know whether H or X was poured first. The first tensile bar H had a small air hole, which being corrected for added 7 per cent. to its tensile strength, and this is also given in the table. A second bar was then turned up from the immediate joining piece with the result recorded first in the table. The turned bars were 0.937 in. in diameter. Column 6 gives the original diameter. Column 2 was found by reducing the actual breaking loads in the ratio of the cubes of the diameters, and Column 3 was reduced to the square inch area. Why the transverse breaking loads should vary 10 per cent. and the tensile bars 4 to 7 per cent. the opposite way, a total variation of 14 to 17 per cent., I leave to the reflection of the reader. If we apply Clark's formula for the breaking weights for circular bars, $W = \frac{0.7854 \times d^3 \times S}{l}$ we find the values given in Column 5.

Table 6.—Circular Test Bars Cast in Vertical Dry Sand Mold.

Bar mark.	Breaking loads.—Pounds. Transverse.	Tensile.	Deflection. Inches.	Value of W by formula. Pounds.	Original diameter. Inches.
H	3,344	23,070	0.15	2,948	1.305
H	3,344	23,754	0.15	3,036	1.305
X	3,026	24,670	0.12	3,153	1.300
1	2	3	4	5	6

In this age of economic production, the cost of these turned tensile bars is frequently objected to by the manufacturer. While blow-holes seem to be more frequent in flat transverse bars than in round attached tensile bars, the latter seem liable to a greater abnormal hardness, for which I have no explanation. Some indication of the toughness of cast iron can be seen in its deflection, which is not revealed in a direct tensile pull. I should, therefore, be satisfied with two or three transverse test bars 2 x 1 x 24 in. centers, and a deflection record poured, as near as may be, from the middle of the pour of the main casting, as giving a fair indication of the iron in the main casting, but mathematical exactness cannot be looked for as yet. If we wish to know approximately the corresponding tensile strength of the iron, we can multiply the breaking load of the 2 x 1 x 24 in. flat bar by 10. If the test bar is of 1¼-in. diameter by 12 in. centers, its breaking load should be multiplied by 8, to obtain the approximate tensile strength. The general rule seems to be that where both flat bars agree in breaking loads the tensile strength is 10 to 1 of the breaking load, but where they differ the 10 to 1 ratio does not hold. A better practice, therefore, might be to cast three round transverse bars and accept the two that agree, if each is round, as a fair sample of the iron, dispensing with the tensile bars. This concession to the manufacturer, I believe, would entail not only no loss to the city's interests, but a positive gain.

The following data was added by the author at the time the paper was presented regarding 11 tests made on round test bars cast in sets of three each, and 31 tests where the bars were cast in sets of two each. The breaking loads in pounds with a deflection of 0.12 to 0.15 in. are given in the following table:

Test No.	*Breaking Loads in Pounds.* A.	B.	C.
1	3,276	3,367	3,276
2	3,185	3,276	3,534
3	3,044	3,162	3,255
4	4,400	3,100	3,500
5	4,005	3,913	3,640
6	2,913	3,003	3,115
7	3,276	3,185	3,026
8	3,306	3,204	2,937
9	3,382	3,003	2,976
10	3,204	3,204	2,912
11	3,268	3,124	2,812

These three bars were cast in three separate molds; the bars in the first column were cast from the first pour, those in the second from the middle, and those in the last column from the bottom of the ladle. Eight out of the 11 sets which correspond to the rule of selecting one of the two nearest in agreement came from the middle of the pour, and the extreme variations were from the first or last pour. The 31 sets emphasize the desirability of the proposed practice. If only two bars were cast, the variation was as high as 22 per cent., while if the two out of three nearest in agreement were selected as representative, this variation would not be more than 2 or 3 per cent.

THE IRON AGE

Established in 1855.

New York, Thursday, December 30, 1909.

Entered at the New York Post Office, as Second Class Mail Matter.

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H. R. COBLEIGH, - - - - - - - MECHANICAL EDITOR

The Postage on Magazines and Trade Papers.

President Taft, in his recent message to Congress, called prominent attention to a matter which has now been put in definite form by Postmaster General Frank H. Hitchcock in his report on the administration of the Post Office Department, made public December 26. Mr. Hitchcock states that the revenue of his department fell $17,479,770 below the expenditures in the last fiscal year, and further says: "Recent investigations have shown that the two great sources of loss to the postal revenues are second-class mail matter and rural delivery. The annual loss on second-class mail matter has been increasing for many years until it now amounts to $64,000,000. The loss from rural delivery, a service begun hardly a dozen years ago and of unprecedented growth, reaches as high as $26,000,000." Regarding the postage on second-class matter, he says that while this class of mail provides a revenue of little more than one cent a pound the cost to the government for its handling and transportation averages 9.23 cents a pound. He suggests two remedies, either a higher charge for mailing magazines (which include trade papers) than for carrying newspapers, or a plan that will recognize the length of haul by establishing zone systems in which certain rates shall be charged.

The allegation of a heavy loss to the Government through the distribution of second-class matter is not a new one. It has been brought forward quite frequently in reports of previous postmasters general, and efforts have from time to time been made by officials of the Post Office Department both to reduce the number of periodicals having the second-class privilege and to restrict the circulation of those so distributed and some success has attended these efforts, but it now looks as though a much stronger campaign against periodicals in general is contemplated, with the whole influence of the Administration behind it. President Taft and his advisers are undoubtedly to be commended for the policy of economy which they are endeavoring to introduce in the matter of national expenditure generally. It is, however, open to question whether it is desirable as a part of this policy to insist that the Post Office Department shall be placed upon a net revenue producing foundation. This department is conducted for the benefit of the public, as are those of the judiciary, the army and the navy, none of which is expected to make money. Without going into the question of whether the Post Office Department under present rates could be so administered as to avoid a deficit, as has been confidently asserted by substantial business men, the point we desire to make to our readers is that if the second-class rate of one cent per pound for reputable periodicals is a subsidy, it is distinctly a subsidy to the public and not to the publishers. Every advantage under these rates is passed along by the publishers to their subscribers and none of it retained for themselves.

The publishing business, which has grown up under the present law within the last 20 odd years, is accurately adjusted to the rate of one cent a pound for postage. It follows, therefore, that any substantial advance in this rate would have to be added to the subscription price and paid by the reader. Whenever the Post Office Department has sought to bring about such an increase to the second-class privilege, it has invariably referred to it as in the nature of a subsidy to publishers. It is nothing of the kind; and we suggest that any readers of *The Iron Age* who feel that it would be disadvantageous and unnecessary to make such changes in the law as would increase the cost of reading matter to themselves should indicate their views on this point to their senators and representatives in Congress at the very beginning of the movement, which has now been set on foot, and which will doubtless be pushed forward vigorously unless explicitly disapproved by the reading public, which comprises substantially all the adult population of the United States.

The Increased Cost of Living.

The cost of living, which has long been steadily increasing, has now reached a point so high that it is characterized as alarming. According to the December report on this subject recently issued by the Bradstreet Company, the prices of commodities are now within a very slight fraction of the record. Thus far the highest prices ever known in this country were on March 1, 1907. On that date the Bradstreet table of index numbers showed a level of $9.1293. On December 1 of this year the level stood at $9.1262. These index numbers are the totals of the prices per pound of 96 articles, quarterly or monthly, used as a standard of comparison.

The United States Government can very properly make an investigation of the facts regarding the advance in the price of necessities in the hope that the causes of the heavy increase in the past dozen years may be elucidated and a remedy or remedies suggested. It is exceedingly important that we should be able to know what influences have brought it about. So far as inquiries have been directed by representatives of the daily press, they have simply succeeded in bringing out charges by one set of persons against another set. Each in turn points to those from whom purchases are made as being responsible for higher rates. Thus the advance would appear to have been brought about by a continuous pressure from the first producer to the final seller. A Government inquiry should take in a very wide range of producers, transporters and distributers, but it is necessary that it should go even further than this. To limit the investigation to the interests enumerated would be simply scratching the surface. The investigation should follow up the impres-

sion in many quarters that the tariff has a very great deal to do with the high level of prices obtaining in this country. Another influence which is alleged to be having an important effect in this direction is the increased output of gold in the past dozen years, which has comparatively cheapened this metal and commensurately diminished its purchasing power, thus enhancing the price of all sorts of commodities. Another subject for investigation is the influence which large aggregations of capital may have on the control in fewer hands of important sources of supply. Another direction in which the investigation can well be extended is the great growth of labor organizations and the influence exerted by them in advancing wages excessively in many lines of endeavor.

If the result of such an investigation should be fruitless as to a remedy, and it be found that the influences which have brought about the increased cost of living are more than likely to continue potential throughout the world by reason of a generally higher standard of living or by consumptive demands outrunning production, employers of labor will be obliged to recognize this fact and prepare themselves to pay higher rates of wages. It is now becoming a serious question with those who depend on salaries, or whose wages are not kept up to a high level by labor organizations, to be able to support themselves decently or to bring up families as they should. It is interesting to note in this connection that some employers of labor are alive to these conditions and are voluntarily advancing the wages of their workmen. A notable instance in this direction is the action of the Iron League Erectors' Association of New York City, an open shop organization, which announces that on February 1 the rate of wages paid by the members of that association will be raised to 60 cents an hour, or $4.80 a day of eight hours, and on July 1 to $5 a day. It is worthy of remark that the rate of wages fixed for July 1 is higher than the rate for which the employees of the members of this association struck two years ago, and the advance is made without any demand having developed from any source. The question of how to meet the cost of living is probably more important than any now coming before the employers of this country, and it presses for an early and satisfactory solution.

Bogus Machinery Dealers.

At a recent meeting of prominent New York machinery dealers, the president of the National Supply and Machinery Dealers' Association called attention to the advantages of his organization. One of its objects, as thus outlined, would seem to deserve the cooperation of every machinery dealer. It was stated that the association is classifying machinery buying and selling houses so as to be informed on the character of their business. The object of this is to stamp out so-called equipment companies and supply companies that are really organized by large consumers with a view to buying machinery at dealers' prices. It is a notorious fact that quite recently a company of that kind was formed in New York, and for a time it bought machinery which was turned over for the use of its own stockholders. Many instances can also be cited of firms making a business of acting as "purchasing agents" for enterprises which require large machinery expenditures. These people buy as dealers and turn their purchases over to the parties they represent at a reduction on what the "customer" would have to pay to a regular dealer. In such cases the consumer often finances the transaction. The existence of firms of this kind is unfair to regular dealers who maintain a paid selling force, make large expenditures in order to carry machinery in stock and properly advertise their business. If the National Supply and Machinery Dealers' Association succeeds in nothing more than accomplishing the elimination of these bogus machinery dealers, its work will be worthy of the co-operation of the trade.

The Argument for the Closed Shop.

It is a common claim of labor leaders that the unions are entitled to use extraordinary measures to bring all wage workers into their ranks. In support of this claim, it is urged that the unions have wrung from unwilling employers all that labor has gained since the factory system was established. The argument has been so often stated that it has found no little acceptance. It has often done service in support of the demand for a closed shop, in spite of the fact that but a small percentage of the wage earners of the country are members of labor unions. It has been used to veil the real intent of the closed shop, which is the control by the union of the instruments of production, and thus of the rate of production and the price per unit of output. It has been brought forward again in connection with the waist makers' strike in New York City, the claim being made that only by "recognition of the union" could the conditions sought be continued after having once been gained.

Sympathy with a body of workers who doubtless have grievances has led in this case to the support of the strikers' demands as a whole by persons who have less knowledge than the average manufacturer of the sinister things that lie behind that apparently harmless word "recognition." Conference by employers with union representatives is not "recognition" in the union sense, nor is collective bargaining, nor the granting of the right to organize. Referring to the New York strikers' statement of wrongs, which is like those so often made by the unions, the New York *Times* says:

> They are not suffering for lack of these things, because they have them all, except the closed shop. They are organized, they are bargaining collectively, and they could enforce their demands in this way for an indefinite future, with the approval of all. They are not altogether sincere when they say that they want the "closed shop" for this purpose. They want the "closed shop" to prevent others taking the wages they scorn. When they strike for the closed shop they are not striking for any right of their own, but to take away the right of working from all but their own members. If the demand is granted the shops would be closed to all but unionists. All others might starve for all these strikers care. And many who are supporting them fail to see the point, because unorganized labor is not tugging at their skirts.

The most effective and practical answer employers can make to the arguments of the unions in favor of the closed shop is the payment of higher wages and the establishment of better shop conditions than the unions have been able to secure for their members. Granting that the unions have benefited their members, and that they have helped to establish standards in many trades that have been of advantage to non-union workers, it is going far beyond the bounds of truth to say that only by the closed shop can fair con-

ditions be maintained. The employers who have formed associations in certain of the metal trades in late years have done nothing greater and nothing more effectually exposing the fallacy of many union claims than to pay higher wages, and in other particulars to give employees a larger return than the union secures under collective bargaining. The average efficiency in a capably managed open shop being naturally higher than in a closed shop makes possible a better return both to the workman and the proprietor.

No other development in the factory labor situation in recent years is more important than this which far seeing and broad minded employers have done so much to forward. Unionism has been so in the habit of claiming credit for all betterment, that many onlookers in labor contests have overlooked what invention has done, added to wise management, improved shop organization and all the ameliorating influences that have grown so active, not only in industry, but in all human endeavor in the past decade. Employers have been finding out without any help from the unions that well paid labor is the cheapest, that good shop conditions pay, and that dissatisfied workmen are not efficient. It is not surprising that the closed shop is losing ground, since it more and more means the closing of the door of opportunity against the workman within as well as the workman without. The arguments in its favor have less and less weight as the conditions they conceal become better understood.

Pennsylvania Railroad Car and Locomotive Orders in 1909.

A detailed statement has been prepared by the Pennsylvania Railroad Company showing the cars and locomotives ordered for its various lines in the year 1909. A summary is as follows:

Philadelphia, Baltimore & Washington Railroad Company, 366 freight cars (including 225 for 1910) and 13 locomotives.

Northern Central Railway Company, 957 freight cars (435 for 1910) and 5 locomotives.

Pennsylvania Railroad Company (including Allegheny Valley Railway, Western New York & Pennsylvania Railway and Pennsylvania & Northwestern Railroad), 13,078 freight cars (of which 9201 are for 1910), 298 passenger and baggage cars and 57 locomotives.

West Jersey & Seashore Railroad Company, 47 freight cars (27 for 1910) and 140 locomotives.

Pennsylvania Lines West of Pittsburgh, 47 passenger and mail cars and 10,400 freight cars.

The total ordered for all the Pennsylvania lines was thus 24,848 freight and 345 passenger and other cars, and 215 locomotives. Of the freight cars 9888 are for 1910 delivery. Of the total ordered this year 3095 cars and 138 locomotives have been or are to be built in Pennsylvania Railroad shops.

Rotary Cement Kilns.—The largest rotary cement kiln in Great Britain is installed at the works of B. J. Forder & Sons, Ltd., Sundon, near Dunstable, where it has been in successful operation for some time. Rotary cement kilns have been chiefly supplied by Continental houses, but in this case the plant was designed and built entirely by a British firm, Edgar Allen & Co., Ltd., steel manufacturers of Sheffield, who about a year ago organized a department for the complete equipment of cement plants. This firm, which has other cement plants in course of construction, also builds ball mills and tube mills for both wet and dry grinding, and its Stag manganese and special hard cast steels are widely used for renewals to all kinds of machines employed in cement manufacture. Its American branches are at 434 West Randolph street, Chicago, and 282 Pearl street, New York City.

Rogers-Brown Iron Company to Build Two Blast Furnaces.

Papers have been forwarded to Albany for the incorporation of the Rogers-Brown Iron Company, Buffalo, N. Y., with a capital of $5,000,000. This company will purchase the property of the South Buffalo Canal & Dock Company, adjoining that of the Buffalo & Susquehanna Iron Company, having about 1000 ft. frontage on the Union Ship Canal at the southerly city line of Buffalo, and near the plant of the Lackawanna Steel Company. As soon as possible ore docks and two blast furnaces will be built, which will probably be duplicates of the two Susquehanna furnaces which have operated so successfully. The new company will also acquire by purchase and merger the Buffalo & Susquehanna Iron Company, which carries with it all of its ore mines in Minnesota and Michigan, and the coal mine and coke oven operations in Pennsylvania. The consolidated company will then have five important ore properties in Michigan and the Susquehanna mine on the Mesaba range of Minnesota, the latter estimated to contain 26,000,000 tons of ore, both Bessemer and non-Bessemer, most of which can be mined with steam shovels when the surface is removed.

The officers of the Rogers-Brown Iron Company are the following: President, William A. Rogers; first vice-president, Stephen M. Clement; second vice-president and general manager, Hugh Kennedy; secretary, H. D. Carson; treasurer, William T. Shepard. The directors are: William A. Rogers, Stephen M. Clement, Charles W. Goodyear, Hugh Kennedy, William T. Shepard. The company has sold $4,500,000 first mortgage and refunding bonds to William Salomon & Co., New York; Brown Brothers & Co., New York, and J. C. Dann & Co., Buffalo, the proceeds of which will be applied to stripping the surface soil and gravel from the ore body at Hibbing, Minn., and to building blast furnaces, ore docks, coke ovens, &c.

The manufactured product will be sold and distributed by Rogers, Brown & Co., which has branch offices in all the principal consuming centers, and of which President Rogers and Treasurer Shepard are members. The output of the two new furnaces will be 700 tons of pig iron daily. Plans are being completed and it is expected contracts for construction will be let within a few weeks. About 18 months will be required for the completion of furnaces from the time ground is broken. The site of the new furnaces, together with the land occupied by the two Buffalo & Susquehanna furnaces adjoining, comprises 83 acres, fronting on the Union Ship Canal, which is accessible for the largest lake boats, and leads from the outer harbor protected by the government sea wall five miles in length.

An associated company, the Buffalo & Susquehanna Steamship Company, owning ore boats, will handle a large proportion of the new company's ore from its Lake Superior mines.

The Metric System in Denmark.—The Danish Minister of Commerce has decided that the metric system alone is to be employed in Denmark on and after April 1, 1910, in all custom houses and in connection with all public taxes. This decision is in conformity with a law voted by the Danish Parliament in 1907. As to the date for the general application of the metric system in commerce, no new decision has been promulgated, and it is therefore probable that the date first indicated, April 1, 1912, will be maintained.

The Garry Iron & Steel Company's Progress.

The Garry Iron & Steel Company, Cleveland, which will build a new plant in Youngstown, as announced last week, has awarded the contract for the mill equipment to the United Engineering & Foundry Company, Pittsburgh. The McClintic & Marshall Construction Company, Pittsburgh, has the contract for the erection of the steel structure. Work on both contracts will be started at once. A large power plant will be erected for operating the mills and manufacturing plant, plans for which have not yet been prepared. In addition to the George B. Sennett Company's plant, recently used by the Harris Safety Company, the Garry Company has purchased the adjoining plant of the Reliance Edge Tool Company, thus providing commodious and suitable quarters for its present manufacturing business which will be removed from Cleveland to Youngstown prior to July 1. These plants adjoin the track of 10 acres of land along Crab Creek, and are on the right of way of the New York Central Lines.

The Garry Iron & Steel Company at present manufactures conductor pipe and eaves trough, metal roofing and siding, expanded metal lath, dry paints and mortar colors, and is a heavy jobber in flat sheets and tin plate. For several years it has been one of the largest buyers of sheets in the country, and to better enable it to take care of its increasing requirements in this line it decided to build the plant in Youngstown with six hot mills, including a tin mill for rolling sheets of lighter gauges. Provision will also be made for the production of pure iron sheets. Its conductor pipe and roofing department will be equipped with new machinery so as to produce the best possible article at minimum cost. The Garry Company will remove its general offices to Youngstown, but it will maintain a branch office and warehouse in Cleveland, where a large stock of its present lines will be carried.

Drawback Regulations.

The Treasury Department announces that on the exportation of wire rods manufactured by the Page Woven Wire Fence Company, Monessen, Pa., from imported steel ingots, drawback will be allowed. In liquidation, the quantity of imported ingots which may be taken as the basis for the allowance of drawback may equal the quantity used as declared in the drawback entry, after official verification of exported quantities, provided it shall not exceed the net weight of the wire rods with an addition thereto to compensate for worthless waste, the maximum allowance including waste not to be in excess of 110.12 lb. of imported steel ingots for each 100 lb. of wire rods, No. 5, exported.

Announcement is also made that drawback will be allowed on the exportation of cogwheels manufactured by F. L. Smidth & Co., of New York and Jersey City, N. J., with the use of imported rough cast wheels. In liquidation, the quantity of imported material which may be taken as the basis for the allowance of drawback may equal the quantity used as declared in the drawback entry after official verification of exported quantities, provided it shall not exceed the net weight of the exported wheels with an addition thereto to compensate for loss in manufacture, not to be in excess of 1.88 per cent. of the exported weight.

The Brier Hill Iron & Coal Company and the Youngstown Steel Company, Youngstown, Ohio, both gave their employees who have been in their service for at least a year a full month's pay in addition to their regular wages. Those who had been employed for less than a year received half a month's pay. This remembrance extended to all on the pay roll, from officials to day laborers.

The Condition of the Hardware Trade.

Relative to the condition of the hardware trade *Iron Age-Hardware* of December 25 says:

The approaching close of the calendar year finds business ranging from fair in some sections to excellent in other portions of the country. In Eastern territory and especially where there have been large bodies of employees on part time in the past, expenditures have to some extent been limited in proportion to shrinkage in income, particularly in and near large cities and in factory communities, but with the impulse given to production these conditions are rapidly improving. In contrast with this state the Middle West and Far West to the Pacific Coast are experiencing an early and strong undercurrent of returning prosperity, as is evidenced by substantial orders for spring business. Not so favorable are the reports from the Southern States, but even there the situation is improving. As is customary at this time of the year money is somewhat tighter, and in some instances collections slower, the smaller dealers having the credit of being the most prompt in settlement. The usual hoarding of cash to tide over the turn of the year, shows temporarily good balances, pay dividends, redeem coupons and liquidate interest charges, most pronounced with the approach of January, contributes legitimately to harden rates for ready money.

In various lines there is evidence of excellent business. Not only are architects extremely busy on preliminary business, but manufacturers of builders' hardware are actively assisting in the preparation and calculation of specifications for trim required that is needed in finishing up processes. The only inference deducible from these facts is the continuance of activity in building, and probably on a larger scale than during the past season. Already buyers for leading wholesale houses predict difficulty in obtaining supplies in several lines when needed. The manufacturers, on the other hand, profiting by past experience, in certain lines at least, are declining to assume obligations that will congest order books with contracts at low prices to be later executed by the use of higher priced material with enhanced labor costs. There is already some difficulty apparent in holding experienced and competent employees at prevailing rates in view of the steadily increasing cost of living and the greater demand for their services. There is a good deal of agitation in regard to labor, and it is not improbable that labor questions may command attention in the near future. The tendency in wages is toward a higher level. So far as this influence goes it tends to give strength to market values for merchandise, and prices with the enhanced cost of raw material are very firm, with advances from day to day in one line or another. The expectation of large business in 1910 is very generally entertained, and the holidays will naturally be observed with a spirit of cheerfulness, in view of existing conditions and a confidence in the future of business, which will, we trust, be justified in ample measure in the experience of our readers as they perform the duties, enjoy the privileges and achieve the successes of A HAPPY AND PROSPEROUS NEW YEAR.

The Seattle Frog & Switch Company, Seattle, Wash., was awarded a gold medal for the excellence of material, arrangement and workmanship in its exhibit at the Alaska-Yukon-Pacific Exposition. The company has just completed and moved into its new plant, which is equipped with the largest frog and switch tools made, and of the latest approved design, having been especially designed by the management after careful study of the requirements of the trade and in connection with one of the most expert toolmakers in the country. The most intricate work in this line can now be turned out in these shops.

Labor's Legislative Programme.

WASHINGTON, D. C., December 28, 1909.—Leaders of organized labor are preparing, under the general direction of the officers of the American Federation of Labor, a progamme of legislation which will be urged upon the two houses of Congress immediately after the holiday recess. The programme is a comprehensive one and should be carefully examined by all manufacturers and other employers, including as it does the so-called eight-hour bill, an amendment to the Sherman anti-trust act exempting combinations of labor from its provisions, a drastic anti-injunction bill, a bill requiring the trial by jury of all cases of contempt not actually committed in the presence of the court, &c. The labor leaders have obtained pledges of support from a considerable number of members of both Houses and even the President has been induced to recommend the passage of an anti-injunction law, to which employers as a class are likely to be strongly opposed.

The eight-hour bill favored by the Federation officials has been introduced in the House by Representative Gardner of New Jersey, chairman of the Labor Committee. A measure having a similar object, but varying in the detail of its provisions, has been pending in Congress for nearly a dozen years and on several occasions has passed the House only to be pigeon-holed by the Senate Committee on Education and Labor, or sent to the Senate at too late a date to secure consideration.

The certainty that an attempt will be made to amend the Sherman anti-trust law this winter—although it is doubtful that a bill will pass both Houses at the present session—lends a special importance to a bill just introduced by Representative Martin of Colorado, which has the indorsement of organized labor and which provides that nothing in the act shall be held to prohibit combinations of labor, agricultural organizations, &c.

Nearly a dozen bills restricting the use of injunctions and restraining orders in labor disputes and in other classes of cases have been presented in the two Houses since the new session began. The bill most strongly favored by the labor leaders is a drastic measure forbidding the issuance of injunctions without notice to the parties enjoined without regard to whether the delay involved may result in irreparable loss. The leading bill of this type has been presented by Representative Beall of Texas.

The President's views have been reduced to concrete form by Representative Johnson of Ohio, who, following closely the recommendation in the message above quoted, has drafted and introduced a bill which is regarded as a species of compromise and will undoubtedly have considerable backing in the House Judiciary Committee, to which it has been referred.

A bill authorizing a species of compulsory arbitration of labor disputes has been introduced in the House by Representative Townsend of Michigan, but thus far has aroused only the lukewarm support of the labor organizations. It has the support, however, of the Bureau of Labor of the Department of Commerce and Labor, and will have some strength because of the fact that a similar measure was favorably reported from the House Committee on Interstate and Foreign Commerce in the Sixtieth Congress, although at too late a date to receive consideration. W. L. C.

The British Iron Trade Association has just made public the statistics of the production of pig iron in Great Britain for the first half of 1909. The output was 4,715,679 gross tons as compared with a production of 4,653,989 tons in the previous half year, thus showing an increase of 61,690 tons.

The French Tariff Situation.

Markt & Co., Ltd., Paris, France, have issued a statement, from which the following is taken:

The French tariff actually in force consists of two sections, the minimum and the maximum tariff. The minimum tariff is granted to all European nations, except Portugal, and it seems that even that country is negotiating now with France in order to obtain its benefit. All European nations can then send their goods into France at a rate of duty which, at present, is about 20 to 25 per cent. lower than the rate applied to goods manufactured in the United States.

There is no non-European country outside of the United States which manufactures to any extent goods importable into France, and, consequently, the manufacturers of the United States by paying alone in France the maximum tariff are at a severe disadvantage against all their competitors, such as England, Germany, Belgium, Switzerland, Sweden and others. This difference will be still larger in the future. American goods, already at a disadvantage on account of distance and the higher cost of transportation resulting therefrom, will be subject to a duty higher than that levied on European products by at least 50 per cent., and in some cases more, for, as it is well known, a new tariff law is at present under discussion in the French Chamber of Deputies. Not only will the duty on all goods imported into France be much higher, but the difference between the minimum and the maximum tariff will also be increased considerably.

If it may be considered impossible to obtain a lower rate of duty than those which are undoubtedly going to be voted by the French Chamber, still it is of the greatest importance for all American manufacturers that their products shall be admitted into France at a duty not higher than that paid by their European competitors. We are of the opinion that all American manufactures should enjoy the same tariff as England, Germany, Belgium, Switzerland, Sweden and such other countries as are now furnishing France part of their products in competition with the United States. It is, therefore, of the greatest importance that the United States Government and the American manufacturers should appreciate the situation in France.

The Bourne-Fuller Company Acquires the Globe Rolling Mill Company.

Announcement has been made in the past week of the acquisition by the Bourne-Fuller Company, Cleveland, Ohio, the well-known iron and steel jobbers, of the warehouse property and assets of the Globe Rolling Mill Company, Cincinnati, Ohio. In negotiating for this business the Bourne-Fuller Company considered that these additional distributing facilities would be advantageous in reaching the general trade in the South and Southwest, as well as the large trade in and tributary to Cincinnati. The company plans to increase largely the present warehouse stock in Cincinnati, and to provide additional facilities for handling and cutting structural and other material, with a view to better serving the important trade which has been handled by the Cincinnati company, and that regularly supplied by the Bourne-Fuller Company from its Cleveland warehouses. T. H. Carruthers, formerly president of the Globe Rolling Mill Company, and C. F. Lansing, secretary of that company, remain actively and financially interested and in direct charge of operations in Cincinnati.

The Lebanon Valley Iron Company, Lebanon, Pa., has increased its capital stock from $300,000 to $1,000,000. A fourth mill will soon be added for the manufacture of bolts, nuts, rivets, &c. The new plant will employ 1000 men.

OBITUARY.

DR. CHARLES B. DUDLEY.

Brief mention was made in the last issue of *The Iron Age* of the death of the distinguished Dr. Charles B. Dudley, which occurred at Altoona, Pa., December 21. He died of pneumonia after a brief illness. Mrs. Dudley, to whom he was married in 1906, survives him.

Dr. Charles Benjamin Dudley was born at Oxford, Chenango County, N. Y., July 14, 1842 of New England parentage, and spent his early years in attending the village school and academy, devoting his spare time to work on the farm. He was looking forward to securing a college education when the civil war broke out. He enlisted as a private soldier, spent the greater part of three years in the service, and was finally severely wounded in the leg in the Shenandoah campaign, the wound leaving him a cripple. His studious disposition manifested itself while in the army. He had his Latin grammar and reader sent to him and he devoted many hours of his camp leisure to study.

Returning from the war in 1865 he prepared for college at Oxford Academy and Collegiate Institute and on his graduation entered Yale College, from which he graduated the class of 1871. The next year he spent in newspaper work in New Haven, Conn. In 1872 he entered the Sheffield Scientific School at Yale College, and graduated in 1874 with the degree of Ph. D., having spent the two years largely in chemical study. Having no independent means, he incurred obligations in these years of study which took some time to discharge. The next year was spent as assistant to Dr. George F. Barker, professor of physics, at the University of Pennsylvania. In 1875 he accepted the position of teacher of science in Riverview Military Academy, Poughkeepsie, N. Y., soon resigning to accept the position of chemist for the Pennsylvania Railroad Company at Altoona. The career in which he won distinction began November 10, 1875. He remained in the service of the company until his death.

DR. CHARLES B. DUDLEY.

When Dr. Dudley began his work with the Pennsylvania Railroad Company, no railroad companies had regularly employed chemists. Many of them had occasional chemical work done and at the time the whole subject of the relation between scientific knowledge and its practical use by railroads was in a chaotic state. The study of the properties of metal and other materials used in railroad construction work was in its infancy. The study of the manufactured materials to obtain the best results in service brought about the establishment of an experimental department for the testing of various materials used in railroad construction work, which was done by Theodore N. Ely, while located in Altoona as superintendent of motive power, and Dr. Dudley was the man selected as the head of the department.

In his 34 years of labor and study as the head of the chemical and experimental department of the Pennsylvania Railroad Company, Dr. Dudley has accomplished an enormous work. It has practically revolutionized railroad construction work. He was a recognized authority on steel rails, the influence of a thorough investigation made by him in the early 80's having been deep and lasting, although vigorously combated by practical steel makers. He was also an authority on the use of steel for construction work and on cast iron for car wheels and other purposes. He was considered an authority on ventilation and through his tests and experiments evolved the present satisfactory system of ventilating passenger cars. All material used by the company is purchased on specifications and it was through Dr. Dudley's department that it was either accepted or rejected. His decision on coal, water, oils, paints, &c., was final and in all he was regarded as an expert. He had an exhaustive knowledge of explosives and is one of the men who brought about the formulation of the rules governing the transportation of explosives and other hazardous materials.

His pre-eminence in these lines was fully recognized by others working in the same field, who honored him with the highest positions in technical and scientific societies. He was president of the International Society for Testing Materials, president of the American Society for Testing Materials, president of the Bureau for Safe Transportation of Explosives and Other Hazardous Materials of the American Railway Association, chairman of the Committee on Explosives of the American Railway Association, a member of the American Institute of Civil Engineers, American Society of Mining Engineers, American Society of Mechanical Engineers, American Institute of Electrical Engineers, American Electrochemical Society, Franklin Institute of Philadelphia, American Association of Advancement of Science, American Philosophical Society, American Railway Association, American Historical Association, Society for Promotion of Engineering Education, American Forestry Association, American Chemical Society, American Public Health Association, Iron and Steel Institute and numerous English, French and German chemical societies.

Among Dr. Dudley's contributions to engineering progress by no means least is his service as president of the American Society for Testing Materials in the past seven or eight years. His remarkable presidential addresses on the philosophical and scientific sides of the testing engineer's work are classics in testing literature. Attendants at the annual meetings of this society know well how Dr. Dudley's wide experience and his willingness to put it at the service of others proved the very life of many a discussion. His ability to draw out discussion was also marked. Without detracting in the least from the excellent work of others, it may properly be said that Dr. Dudley's personality has been a pillar of strength to this organization, and that his loss will be keenly felt in its councils.

NOTES.

JAMES W. FRIEND, Pittsburgh, died December 26, aged 65 years. He had been ill for some time. At the time of his death he was vice-president of the Pressed Steel Car Company and officially identified with numerous financial institutions. He was born in Pittsburgh, and was the grandson of the late James Wood, who was probably the first practical steel and iron worker in that city and operated, for many years, an immense iron plant at Saw Mill Run. Mr. Friend first engaged in the iron brokerage business. In this vocation he remained a number of years and was very

successful. In 1886 the firm of Graff, Bennett & Co. became bankrupt, owning plants on the Southside and at Millvale. This property was sold. Mr. Friend and F. M. Hoffstot jointly purchased the Southside plant, known as the Clinton Furnace. In 1900 they purchased the Schoen steel car business, now the Pressed Steel Car Company. Mr. Friend leaves a widow and four children.

WILLIAM S. SHULER of the W. S. Shuler Spring Company, Amsterdam, N. Y., died suddenly December 23, aged 53 years.

ARTHUR BROCK, Philadelphia, died December 24, aged 59 years. He was born in that city and received his education in the old Philadelphia Polytechnic College. He embarked in the iron and steel business when a young man and at the time of his death was chairman of the Board of Directors of the American Iron & Steel Mfg. Company, Lebanon, Pa. Mr. Brock was also a director of the Pennsylvania Steel Company, a director of the Fidelity Trust Company and for many years trustee of the Penn Mutual Life Insurance Company.

THOMAS O'HANLON, Utica, N. Y., died suddenly December 24, aged 63 years. He was senior member of the firm of Thomas O'Hanlon & Sons, boiler manufacturers.

THOMAS T. MORRELL, who a number of years ago was in charge of the chemical laboratory of the then Cambria Iron Company, Johnstown, Pa., died in Boston, December 16, aged 68 years. He was a nephew of the late Daniel J. Morrell.

ISRAEL WISTAR MORRIS, a pioneer in the development of the anthracite coal fields in Pennsylvania, died in Philadelphia, December 18, aged 80 years. He was the father of Effingham B. Morris, chairman of the Cambria Steel Company.

WILLIAM CLARK MAGEE, Pittsburgh, died December 26, aged 54 years. He had been in failing health for several months. He was born at Enon, Lawrence County, Pa. His first employment was as a telegraph operator. In 1880 he was given a responsible position with the J. M. Schoonmaker Coke Company, and in a short time was made general sales agent. Upon the taking over of that company by the H. C. Frick Coke Company Mr. Magee continued in charge of the sales department and became vice-president. A few years ago he resigned, and identified himself with various enterprises in the mining and selling of coal. He formed the Pickands-Magee Coke Company, and was its president, and was also the president of the Consolidated Connellsville Coke Company and of various other affiliated corporations. He was a director of the Keystone National Bank of Pittsburgh. Mr. Magee never married.

THOMAS G. MCCUTCHEON, Pittsburgh, a member of the former firm of Lindsey & McCutcheon, operating the Star Iron Works, now owned and operated by the Carnegie Steel Company, died December 26, after a short illness, aged 46 years. He was born in Pittsburgh, was educated at Trinity Hall, Washington, Pa., and about 1880 became a member of the firm of Lindsey & McCutcheon. He also engaged at one time in the operating of the Keystone Rolling Mills, Pittsburgh. He had not been actively engaged in business for the past five years.

N. E. WHITAKER, president of the Whitaker-Glessner Company, Wheeling, W. Va., died December 27, of pneumonia, aged 71 years. The Whitaker-Glessner Company operates the Crescent Iron Works, a sheet mill, at Wheeling, and a nail and sheet plant at Martin's Ferry, Ohio, and through the Wheeling Corrugating Company, of which Mr. Whitaker was also president, operates a tin plate mill and galvanizing and roofing plant at Wheeling. Mr. Whitaker was likewise president of the Portsmouth Steel Company, Portsmouth, Ohio, had been a member and president of the West Virginia Senate and president of the West Virginia Commission to the Louisiana Purchase Exposition.

PERSONAL.

James P. Whitla, Sharon, Pa., has been chosen a director of the Sharon Steel Hoop Company to fill the vacancy caused by the death of Morris Bachman. J. Reed Evans, formerly auditor of the Crucible Steel Company of America, has been elected secretary of the same company to succeed R. A. Winterburn, resigned.

L. Nachmann of the London office of Bandies, Goldschmidt & Co., is in this country for a few weeks. He will take charge of the New York office during the absence of Paul Koening, who will leave in a few days for a trip through Mexico and Central America.

J. Leon Replogle, general superintendent of the order department of the Cambria Steel Company, Johnstown, Pa., will succeed Herbert H. Weaver, January 1, as assistant to General Manager Charles S. Price.

Dana W. Pond, for 10 years superintendent of the Pratt & Cady Company, Hartford, Conn., has resigned to accept the office of superintendent of the Builders' Iron Foundry, Providence, R. I.

Walter Loring Webb has become associated with the Roberts & Abbott Company, consulting, supervising and operating engineering, Cleveland, Ohio. Mr. Webb will represent the company in Philadelphia and vicinity, with offices in rooms 1026-1028 Real Estate Trust Building.

Mention should have been made in the statement concerning the Mount Union Silica Brick Company, Mount Union, Pa., in *The Iron Age* of December 23, of the fact that James M. Duncan, Johnstown, Pa., formerly connected with the steel trade, is the company's sales agent.

James B. Laughlin, for 25 years treasurer of the Jones & Laughlin Steel Company, Pittsburgh, has resigned his position, effective January 1, and will be succeeded by Charles A. Fisher, now assistant auditor and assistant treasurer. Mr. Laughlin is a member of the Executive Committee and a director in the company and will so continue.

Charles B. Barton, for several years advertising manager of the Pittsburgh Gage & Supply Company, Pittsburgh, has resigned, effective January 1, and will locate in Washington, D. C.

P. J. Lavelle, for nine years general manager of the Johnstown, Pa., plant of the Lorain Steel Company, has resigned, effective January 1.

J. A. Farrell, president of the United States Steel Products Export Company, has returned from a trip abroad.

E. C. Felton, F. W. Wood and Charles F. Rand have returned from Cuba where they inspected the Mayari District ore properties of the Spanish-American Iron Company. The first shipment of Mayari ore from the Nipe Bay docks on the north coast of Cuba is expected to reach the Maryland Steel Company's docks at Sparrows Point, Maryland, this week.

The Columbia Tool Steel Company, Chicago Heights, Ill., had a homecoming of its salesmen at Chicago Heights and at Chicago December 28 and 29. The salesmen were all at the mill December 28. In the evening they were given a banquet at the Chicago Athletic Club by Frank Matthiessen, vice-president of the company, covers being laid for 18. A souvenir was presented to each of the guests by E. T. Clarage, president of the company, who acted as toastmaster. It is planned to make this homecoming and dinner an anual event.

NEWS OF THE WORKS.

Iron and Steel.

The Sheldon Axle Company, Wilkes-Barre, Pa., has issued $200,000 worth of bonds and intends installing considerable new machinery for the manufacture of springs and axles for automobiles and commercial trucks.

The furnace of the Stewart Iron Company, Sharon, Pa., which has been out of blast since August for relining, the installation of a bin system and for a number of other improvements, was blown in on Bessemer iron December 17.

The American Rolling Mill, Middletown, Ohio, is having plans prepared for a new plant by A. B. Neuman, Chicago, formerly chief construction engineer of the Indiana Steel Company. Five open hearth furnaces will serve four mills. A central power plant is to be built, equipped with gas engines or steam turbines, and all of the machinery except the main rolls driven by electric motors. Reversing engines, gas producers, boilers, pumps, cranes, strippers, &c., will be among the requirements, although exact specifications have not been entirely formulated.

The Princess Furnace Company, Glen Wilton, Va., will enter upon extensive improvements to its plant, including provision for additional power.

The report that the Pittsburgh Seamless Tube Company will build an open hearth steel plant in connection with its works at Beaver Falls, Pa., is officially contradicted. The company has no important extensions or additions in contemplation at the present time.

The Sloss-Sheffield Steel & Iron Company has blown out one furnace at North Birmingham and one at Birmingham, Ala., for repairs. The furnaces of this company at Sheffield, Ala., will be put in operation about January 1, after having been banked for some days on account of extremely cold weather. The company will have in operation on January 1 one furnace at North Birmingham, one at Birmingham and two at Sheffield, Ala.

Vollkommer & Co., Pittsburgh, engineers and contractors, have just completed a 70 x 80 ft. addition to the south end of the main mill building of the Interstate Steel Company, Brackenridge, Pa., a subsidiary interest of the Allegheny Steel Company, and has under construction a 70 x 120 ft. addition to its plant. They are furnishing some steel for alterations to the open hearth building. The Allegheny Steel Company has also employed the firm on some special work in connection with its recent acquisition of the Interstate Steel Company and the Reliance Tube Company. Vollkommer & Co. have completed the erection of a 50-ft. extension to the boiler house of the Allegheny Plate Glass Company, Glassport, Pa.

General Machinery.

The Allen Engineering Company, Thomas H. Allen, president, Memphis, Tenn., will begin work at once erecting a foundry and machine shop. The company is capitalized at $40,000.

The Keystone Driller Company, Beaver Falls, Pa., R. M. Downie, secretary, intends enlarging its boiler plant. The new building will be 80 x 200 ft., of steel and brick construction.

The Winchester Pump Company has been incorporated at Winchester, Ind., with $10,000 capital stock, as manufacturer of pumps and engines. The directors are W. E. Miller, H. F. Hobbick, J. D. Miller and C. A. Hobbick.

Blood Brothers Machine Company, Kalamazoo, Mich., expect to commence work early next spring upon the erection of a building 100 ft. square, one story, which will be equipped with machinery during the coming season. The company advises it installed nearly $15,000 worth of milling machines, lathes, &c., during the past year and will probably install as much more during the coming season. It manufactures universal joints, steering gears, &c.

The Snow Steam Pump Works, Buffalo, N. Y., is making plans to add to its plant at Roberts avenue and the Pennsylvania Railroad a machine shop, 80 x 200 ft., steel frame and brick, with sawtooth roof.

The Veitch-Matthews Engine Company, G. B. Crowe, president, has decided upon a location at Bessemer, Ala., and proposes to commence the construction of a plant about January 1.

Foundries.

The Strong Steel Foundry Company, Buffalo, N. Y., will enlarge its foundry plant at East Amherst street and the Erie Railroad.

The Acme Steel & Malleable Iron Works, Buffalo, N. Y., Edward G. Feltheusen, president, has purchased additional land on Chandler street, adjacent to its plant at Military Road and the New York Central Belt Line, and will early in the spring erect a machine shop on same. When completed the company will build an addition to its malleable iron foundry on the space vacated by the present machine shop. No new equipment will be purchased until later.

The Harrison Machine Works, Belleville, Ill., is erecting an addition to its foundry, 25 x 80 ft., but advises that it is not contemplating anything new in the way of equipment at the present time.

The McCall Company, Macon, Mo., will install machine and foundry equipment in the plant of the Macon Shear Company, which it recently acquired.

A new brass and manganese bronze foundry is to be added to the plant of the Hancock Mfg. Company, Charlotte, Mich.

The Pulaski Foundry & Machine Company, Pulaski, Va., will rebuild its foundry recently destroyed by fire.

The United States Cast Iron Pipe & Foundry Company, Buffalo, is building at its plant on the New York Central Railroad Belt Line and Box avenue a two-story office building of stone, brick and structural iron.

The Denver Brass Works, Denver, Colo., which was compelled to seek a new site on account of the condemnation of its present location for boulevard purposes, is erecting a new building, 30 x 132 ft., which will be equipped with all modern conveniences and which is expected to be ready for occupancy on or before January 1, 1910.

The Northern Indiana Brass Foundry Company has been incorporated at Elkhart, Ind., with $10,000 capital stock, as manufacturer of brass fittings. The directors are C. G. Schweitzer, Sarah Schweitzer and V. E. Schloyyerbach.

The Pittsburgh Valve & Fittings Company is adding a wing to its malleable iron department at Barberton, Ohio, which will be completed early next year.

Fires.

Fire destroyed the Etna, Pa., water works and light plant; estimated loss of $100,000.

The iron works of George Brown, Brooklyn, N. Y., was damaged to the extent of $15,000 by fire.

The T. S. Marvel Company's shipbuilding plant at Newburgh, N. Y., was partially destroyed by fire December 21, the loss being $75,000.

The plant of the Woonsocket Wagon Company, Woonsocket, R. I., was destroyed by fire December 20. The loss is estimated at $30,000.

Power Plant Equipment.

J. N. Baldwin has been appointed receiver for the Niles Boiler Company, Niles, Ohio, succeeding Wade A. Taylor, resigned.

Bridges.

The Hennepin Bridge Company, Minneapolis, Minn., manufacturer of culverts, will establish a branch at Fargo, N. D., for the distribution of its product. Orders from the West received before the Fargo plant is ready will be taken care of at the Minneapolis plant.

Hardware.

The J. L. Clark Mfg. Company, Rockford, Ill., will put a new plant in operation this season and expects to handle a large output. Machinery has been ordered, but more is to be added later as facilities are provided.

The Elkhart Hardware Mfg. Company has been incorporated at Elkhart, Ind., with $10,000 capital stock, to manufacture piano hardware. The directors are S. E. Schacht, J. G. Schacht and F. T. Moloney.

The McDougal Company, Indianapolis, Ind., successor to G. P. McDougal & Son, has been incorporated with capital stock of $300,000. It is the intention of the new company to erect a plant at Frankfort, Ind., with modern equipment, for the manufacture of kitchen cabinets. Work will be commenced on the factory building at once, with the expectation of having it ready for operation in about 90 days.

Miscellaneous.

The H. H. Franklin Mfg. Company, Syracuse, N. Y., has plans in progress for the erection of a six-story and basement addition to its factory, 65 x 300 ft., steel frame and brick construction, to cost $100,000.

The Pullman Company, which has begun work on extensions to its shops at West Pullman, Ill., including a new power and pressure plant, is reported to be having plans prepared for branch works at Detroit, Mich. Others may be built in Canada.

The Springfield Gas & Electric Company, Springfield, Mo., which has secured franchises for installing gas producer plants in several towns west of Springfield, advises that work on these plants is only in a preliminary stage, and that they are not yet ready to take up the question of purchasing equipment.

A new shop will soon be completed by the North Wales Machine Company, North Wales, Pa., and equipped with heavier tools than most of those heretofore used in that vicinity.

The Detroit Gear Grinding Company, Detroit, Mich., will build a steel frame shop equipped largely with automatic machinery.

The Peerless Motor Car Company, Cleveland, Ohio, is about to take bids on an electric generating plant of 4500 hp., including tubular boilers, automatic stoker, furnaces, heater, pumps, engines or turbines, condensers, alternating current generators, exciters, motors, transformers, switchboard and protective apparatus. Additional operating machinery and motors will be purchased later.

The Cleveland Machine Company has been organized at Marion, Ind., and incorporated with $25,000 capital stock, to

manufacture machines for making glass products. The directors are D. O. Skillen, E. S. Gooden, B. F. Burk, G. A. H. Shideler and G. E. Cleveland.

The Saranac Machine Company, St. Joseph, Mich., contemplates an increase in its manufacturing facilities.

The Valley Iron Works, Williamsport, Pa., will be obliged to increase its manufacturing facilities.

The Gould Balance Valve Company, Des Moines, Iowa, is building a new plant, which will be equipped largely with automatic machinery.

The Southwestern Iron & Steel Company will build a large plant at Oklahoma, Texas, including foundry, machine shops and erecting department. It is understood that the works now operated at Gainesville, Texas, will be turned over to others.

The Berry Rail Clamp Company, Fond du Lac, Wis., has been incorporated with capital stock of $50,000 to manufacture and sell the rail clamp patented by William Berry of that city. The clamp is for the purpose of keeping rails from creeping, spreading or turning and acts as a safety device. Definite location for a manufacturing plant has not been decided, but announcement will be made in the near future. Geo. W. Post is president; Wm. Berry, vice-president; Howard T. Sackett, secretary; Fred D. Pendell, treasurer.

The Darbyshire-Harvie Iron & Machine Company, El Paso, Texas, which is doing a large business with points in the Southwest and Mexico, will be obliged in the near future to extend its facilities for the work

The machine shop of L. O. Larson, Courtney, N. D., will be rebuilt for larger capacity.

The Frederick Fisher Company, which recently acquired a machine shop at Lansing, Mich., will enlarge and re-equip it.

The Geo. P. Smith Company, Charles City, Iowa, will build an addition to its factory. An engine and electric dynamo will probably be needed, besides special machinery.

The Packard Motor Car Company, Detroit, is taking bids for a one and two story forge shop, 80 x 500 ft., of structural steel, brick and stone.

The Chalmers-Detroit Company, Detroit, manufacturer of automobiles and taxicabs, is adding a fourth story, 60 x 400 ft., to one of its factory buildings located at Jefferson avenue and the Belt Line.

Beall Brothers, Alton, Ill., whose shovel factory was recently destroyed by fire, have let a contract for a new fireproof factory building twice as large as the one destroyed, upon which work will be rushed with the expectation of having it ready for operation in three months. Arrangements have been made to take care of customers in the meantime.

The Jamison Coal & Coke Company, Pittsburgh, will eventually spend $1,000,000 in opening up a tract of 10,000 acres of coal bought from the Philadelphia & Reading Coal & Coke Company at a cost of about $2,500,000. This tract is located in the Fairmount District and adjoins the holdings of the Federal, the Georges Creek and the New Federal coal companies. The buyer contemplates building coke ovens as soon as the deposit is opened.

The shop of the Mt. Pleasant (Iowa) Machine Company, which recently changed ownership, will be somewhat enlarged in capacity and additional tools purchased a little later on.

Bruce, Peebles & Co., Ltd., Edinburgh, Scotland, desire to find some patented machine or apparatus the patentees of which wish to have manufactured in Great Britain to save the patents there. They state that they have large and well equipped workshops designed for the manufacture of electrical machinery, but equally suitable for the manufacture of any other machine or apparatus, such as pumps, engines, compressors, &c., or for any other products for which the ordinary machine tools of a well equipped shop are suitable. There are, of course, a number of American inventions patented in Great Britain but not manufactured in that country and are consequently unprotected under the new British patent act.

The Broderick & Bascom Rope Company, St. Louis, Mo., has been awarded the gold medal for wire rope exhibited at the Alaska-Yukon-Pacific Exposition, Seattle. This company, it may be remembered, received the grand prize at the Louisiana Purchase Exposition in 1904, and the gold medal at the Lewis & Clark Exposition in 1905. The company calls attention to the fact that its Yellow Strand rope is giving excellent service throughout the country.

Bounties and Other Topics of Canada's Budget.

TORONTO, December 27, 1909.—In his recent budget speech, Mr. Fielding, Finance Minister of Canada, referred to the bounties. Those on iron and steel, he said, would expire December 31, 1910. He added that the bounty on lead is limited to a term of years, and that on oil is not so limited. It was provided in the act, he said, that the bounties for electric smelting might be extended two years longer. As no action had been taken under that provision, he took it that the bounties on iron and steel would all expire next year. He maintained that the Treasury of Canada had not really lost a dollar by the payment of bounties. The iron and steel industries which had been established had a great effect in the development of the country's trade.

One of the government's supporters who spoke on the budget stated that when the present bounty term came to an end a year hence he for one would strongly oppose the renewal of bounties.

Foreign Trade Relations.

The Finance Minister's references to Canada's trade relations with other countries were rather interesting. He intimated that the outcome of the Royal Commission's inquiry into the trade between Canada and the West Indies might be the securing of a tariff preference for Canada in the markets of the British West Indies. He said that Germany, Italy and Belgium were prepared to enter into negotiations for more favorable commercial relations with Canada.

Speaking of the possibility of friction arising between Canada and the United States as a consequence of the latter's maximum tariff, he said that the terms in which President Taft addressed Congress on that subject give abundant evidence that he and his Cabinet are desirous of continuing the close and friendly relations that prevail between the United States and Canada.

In this connection it is interesting to note that during the first two months, August and September, following the adoption of the Payne tariff imports from the United States into Canada showed an increase of about $11,000,000 over those for the corresponding two months of 1908, while exports from Canada to the United States showed an increase in the same period of about $2,750,000. It would appear, therefore, as if under the new tariff of the United States the trade between the two countries goes on very much the same as it would have gone on under the Dingley tariff.

The Anti-Combine Clause.

The budget contained no announcement of changes in customs duties. One feature of the tariff act, however, is to be amended. That is the section providing for the forfeiture of protection upon articles whose manufacture or trade is controlled by a "combine." At present this part of the law can be invoked by any private citizen who gives the Government reasonable ground for the taking of action to ascertain whether a combination in restraint of trade really exists. But though the inquiry will be instituted, the costs of it have largely to be borne by the private party at whose instance it is begun. He must be at the expense of collecting and producing the evidence. C. A. C. J.

The American Spiral Pipe Works, whose plant is at Fourteenth street and Forty-eighth avenue, Chicago, has increased its forge department and is now making a large line of forged steel gear blanks, automobile parts, railroad forgings, &c., up to 500 lb. weight. The company's specialty is the manufacture of Taylor's special riveted steel pipe.

The Iron and Metal Trades

Increasing Inquiry for Pig Iron.

Good Railroad Business in Prospect.

Few transactions of moment are reported in any branch of the iron trade for the past week. In finished steel business was unexpectedly good for the first three weeks of December; then marked quietness was noticed. Specifications have been much more a feature than new business, and reports indicate that cancellations by steel manufacturers on orders taken on the lower levels of seven and eight months ago will be few. Fabricators in particular have been urgent in closing construction contracts so that they could specify on all the low priced structural steel bought for this year.

Inquiry for pig iron is increasing, buyers seeking to take advantage of the concessions recently offered and to contract for the second quarter of 1910, and in some cases for the third quarter, while the market is under this influence. Apparently there is less low priced iron than was to be had two weeks ago, and since furnaces are facing higher costs they are careful about selling far ahead.

Transactions in Cleveland in the past week have established an advance of 50c. a ton on non-Bessemer as well as Bessemer ores. There was some expectation that producers of foundry and basic irons might get off with less than the Bessemer advance, and that the reduction in the iron ore tariff might be influential, as well as the competition of Southern iron, which Northern buyers of non-Bessemer ores must meet.

The establishment of ore prices that will affect ore charged into blast furnaces 16 to 18 months from today represents a confidence in the continuance of prosperous conditions that has been shown in a similar way but twice in the history of the lake ore trade.

In the Central West sales of basic iron have been made at $17, at furnace, and sellers are now asking $17.25 for first quarter. The amount of speculative basic iron overhanging the market has been reduced, but is still considerable. At $19 Bessemer pig iron is much more attractive to furnacemen, but this year's Bessemer ores cannot be bought now by furnaces that would swing over to Bessemer.

Southern No. 2 foundry iron is still to be had at $14 at furnace for delivery in the first quarter, and one interest has sold over 30,000 tons on that basis. Curtailed ore supply and severe weather have reduced pig iron output in the Birmingham District. In eastern Pennsylvania two or three furnaces have been banked for lack of coke due to snow blockades.

A large block of malleable pig iron has been sold for Eastern delivery, and two important Eastern interests are inquiring for foundry iron.

Steel billets are easier in the Pittsburgh District, owing to the coming out of resale steel, though in comparatively small lots.

A new card of basing discounts on merchant pipe has been issued. An advance on all sizes was expected, but owing to the use of the "card weight" system net prices are little changed.

An enormous demand for sheets is the most conspicuous feature in the finished material situation.

Building prospects for 1910 are encouraging. Chicago reports that projects already in definite form in Western territory will call for 200,000 tons of structural steel.

Among rail sales of the week is one of 6500 tons in the Chicago District to a Vanderbilt line. The Baltimore & Ohio is reported in the market for 70,000 tons. Indications appear of considerable buying of cars and locomotives next month. Leading Western roads are all short of equipment. Pending inquiries include 2000 refrigerator cars for the Harriman lines.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Dec.29, 1909.	Dec.22, 1909.	Nov.24, 1909.	Dec.30, 1908.
PIG IRON, Per Gross Ton:				
Foundry No. 2, standard, Philadelphia	$19.00	$19.00	$19.00	$17.25
Foundry No. 2, Southern, Cincinnati	*17.25*	17.25	17.75	16.25
Foundry No 2, local, Chicago	19.00	19.00	19.00	17.35
Basic, delivered, eastern Penn.	18.75	18.75	18.75	16.75
Basic, Valley furnace	*17.00*	17.00	17.25	15.75
Bessemer, Pittsburgh	19.90	19.90	19.90	17.40
Gray forge, Pittsburgh	17.40	17.40	17.40	15.40
Lake Superior charcoal, Chicago	19.50	19.50	19.50	19.50
BILLETS, &c., Per Gross Ton:				
Bessemer billets, Pittsburgh	27.50	27.50	27.50	25.00
Forging billets, Pittsburgh	31.00	31.00	31.00	27.00
Open hearth billets, Philadelphia	30.60	30.60	30.60	26.20
Wire rods, Pittsburgh	33.00	33.00	33.00	33.00
Steel rails, heavy, at mill	28.00	28.00	28.00	28.00
OLD MATERIAL, Per Gross Ton:				
Steel rails, melting, Chicago	17.25	17.25	17.25	15.00
Steel rails, melting, Philadelphia	*17.00*	17.00	18.00	17.50
Iron rails, Chicago	**20.00**	20.00	19.50	19.50
Iron rails, Philadelphia	*20.50*	20.50	21.00	21.25
Car wheels, Chicago	18.50	18.50	18.50	16.00
Car wheels, Philadelphia	17.50	17.50	17.50	16.00
Heavy steel scrap, Pittsburgh	**18.00**	18.25	17.50	17.00
Heavy steel scrap, Chicago	16.00	16.00	16.00	14.50
Heavy steel scrap, Philadelphia	*17.00*	17.00	18.00	17.50
FINISHED IRON AND STEEL, Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined iron bars, Philadelphia	1.65	1.65	1.65	1.52
Common iron bars, Chicago	1.60	1.60	1.60	1.50
Common iron bars, Pittsburgh	1.70	1.70	1.70	1.50
Steel bars, tidewater, New York	1.66	1.66	1.66	1.56
Steel bars, Pittsburgh	1.50	1.50	1.50	1.40
Tank plates, tidewater, New York	1.71	1.71	1.71	1.76
Tank plates, Pittsburgh	1.55	1.55	1.55	1.60
Beams, tidewater, New York	1.71	1.71	1.71	1.76
Beams, Pittsburgh	1.55	1.55	1.55	1.60
Angles, tidewater, New York	1.71	1.71	1.71	1.76
Angles, Pittsburgh	1.55	1.55	1.55	1.60
Skelp, grooved steel, Pittsburgh	*1.50*	1.55	1.55	1.45
Skelp, sheared steel, Pittsburgh	1.60	1.60	1.60	1.50
SHEETS, NAILS AND WIRE, Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	**2.40**	2.40	2.30	2.50
Wire nails, Pittsburgh*	**1.85**	1.85	1.80	1.95
Cut nails, Pittsburgh	**1.85**	1.80	1.80	1.75
Barb wire, galv., Pittsburgh*	**2.15**	2.15	2.10	2.40
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	14.00	13.75	14.00	14.75
Electrolytic copper, New York	*13.62½*	13.50	13.75	14.25
Spelter, New York	**6.30**	6.30	6.00	5.15
Spelter, St. Louis	*6.15*	6.15	6.25	5.00
Lead, New York	**4.70**	4.70	4.40	4.15
Lead, St. Louis	**4.65**	4.67½	4.27½	4.00
Tin, New York	**33.95**	33.80	31.30	**28.85**
Antimony, Hallett, New York	8.25	8.25	8.25	8.12½
Nickel, New York	45.00	45.00	45.00	45.00
Tin plate, 100 lb., New York	$3.84	$3.84	$3.84	$3.89

* These prices are for largest lots to jobbers.

Prices of Finished Iron and Steel F.O.B. Pittsburgh.

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c. Rates to the Pacific Coast are 80c. on plates, structural shapes and sheets, No. 11 and heavier, 85c. on sheets, Nos. 12 to 16; 95c. on sheets, No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

Structural Shapes.—I-beams and channels, 3 to 15 in., inclusive, 1.55c., net; I-beams over 15 in., 1.65c., net; H-beams over 8 in., 1.75c.; angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c., net; angles over 6 in., 1.65c., net; angles, 3 x 3 in. and up, less than ¼ in., 1.75c., base, half extras, steel bar card; tees, 3 in. and up, 1.65c., net; zees, 3 in. and up, 1.60c., net; angles, channels and tees, under 3 in., 1.70c., base, plus 10c., half extras, steel bar card; deck beams and bulb angles, 1.80c., net; hand rail tees, 2.80c., net; checkered and corrugated plates, 2.80c., net.

Plates.—Tank plates, ¾ in. thick, 61¼ in. up to 100 in. wide, 1.55c. to 1.60c., base. Extras over this price are as follows:

Tank, ship and bridge quality, ¼-in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. plate. Steel plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel plates over 72 in. wide, ordered less than 11 lb. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

Gauges under ¼-in. to and including 3-16-in. plates on thin edges	$0.10
Gauges under 3-16-in. to and including No. 8	.15
Gauges under No. 8 to and including No. 9	.25
All sketches (excepting straight taper plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.)	.10
Complete circles	.20
Boiler and flange steel plates	.10
"A. B. M. A." and ordinary firebox steel plates	.20
Still bottom steel	.30
Marine steel	.40
Locomotive firebox steel	.50
Shell grade of steel is abandoned.	
For widths over 100 in. up to 110 in	.05
For widths over 110 in. up to 115 in	.10
For widths over 115 in. up to 120 in	.15
For widths over 120 in. up to 125 in	.25
For widths over 125 in. up to 130 in	.50
For widths over 130 in	1.00

TERMS.—Net cash 30 days. Pacific Coast base, 1.30c. f.o.b. Pittsburgh.

Sheets.—Minimum prices for mill shipments on sheets in carload and larger lots, on which jobbers charge the usual advances for small lots from store, are as follows: Blue annealed sheets, Nos. 3 to 8, 1.70c.; Nos. 9 and 10, 1.75c.; Nos. 11 and 12, 1.80c.; Nos. 13 and 14, 1.85c.; Nos. 15 and 16, 1.95c. Box annealed sheets, Nos. 17 to 21, 2.20c.; Nos. 22 to 24, 2.25c.; Nos. 25 and 26, 2.30c.; No. 27, 2.35c.; No. 28, 2.40c.; No. 29, 2.45c.; No. 30, 2.55c. Galvanized sheets, Nos. 13 and 14, 2.50c.; Nos. 15 and 16, 2.60c.; Nos. 17 to 21, 2.75c.; Nos. 22 to 24, 2.90c.; Nos. 25 and 26, 3.10c.; No. 27, 3.30c.; No. 28, 3.50c.; No. 29, 3.60c.; No. 30, 3.85c. Painted roofing sheets, No. 28, $1.70 per square. Galvanized roofing sheets, No. 28, $3 per square, for 2½-in. corrugations.

Wrought Pipe.—The following are the discounts on the Pittsburgh basing card on carloads of wrought pipe adopted by the leading mills which go into effect January 1:

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
⅛ and ¼ in	70	54	65	..
⅜ in	71	57	66	52
½ in	74	62	69	57
¾ to 6 in	78	68	73	63
7 to 12 in	72	57	68	53
Plugged and Reamed.				
1 to 4 in	76	66	71	61
Extra Strong, Plain Ends.				
⅛ to ¾ in	63	51	58	46
⅛ to 4 in	70	58	65	53
4½ to 8 in	66	54	61	49
Double Extra Strong, Plain Ends.				
½ to 8 in	59	48	54	43

The above steel pipe discounts are for "card weight," subject to the usual variation of 5 per cent.

Boiler Tubes.—Discounts on lap welded steel and charcoal iron boiler tubes to jobbers in carloads are as follows:

	Steel.	Iron.
1 to 1½ in	49	43
1¾ to 2¼ in	61	43
2½ in	63	48
2¾ to 5 in	69	55
6 to 13 in	60	43

2½ in. and smaller, over 18 ft., 10 per cent. net extra.
2¾ in. and larger, over 22 ft., 10 per cent. net extra.

To destinations east of the Mississippi River will be sold at delivered discount for carloads lowered by two points, for lengths 22 ft. and under; longer lengths, f.o.b. Pittsburgh.

Wire Rods.—Bessemer, open hearth and chain rods, $33.

Steel Rivets.—Structural rivets, 2.15c., base; boiler rivets, 2.25c., base, subject to usual extras.

Chicago.

FISHER BUILDING, December 29, 1909.—(*By Telegraph.*)

The year 1909 closes with conditions in the steel industry of Chicago exactly the reverse of those which prevailed at the beginning of the year. In January and February the steel mills were glad to get small orders of a carload to 100 tons and gave them very careful attention; but now the buyer in small lots gets little consideration. Prompt shipments on new business are practically out of the question with the mills in this district, and they are following quite generally the plan of refusing to quote at all on small orders or any business for prompt shipment. Last fall the sales managers with a few exceptions followed the plan of quoting a price above the market when they did not want the business, but this led them into trouble by advancing prices at a rate which did not meet with the approval of the conservative interests. A refusal to quote at all is undoubtedly more embarrassing to the buyer, but the mills are getting so far behind on light structural shapes and other lines for which the current demand is most active that they desire to make more progress with the business on the books before accepting new contracts. The forehanded buyers who have contracted, and given specifications far enough in advance are having no serious trouble in getting satisfactory deliveries on bars, sheets, plates and structural shapes and the mills are making no efforts to obtain higher prices for deliveries through the first half than they have received on business taken during the last three months of the year. The new merchant mills at Gary are coming into operation just in time to steady the situation in bars, railroad angle bars and light structural material, and the regular structural mills will undoubtedly make better progress when they are relieved of the burden of rolling light sections. Altogether the market is very strong. Aggregate sales by Chicago mills during the past year have been more than 50 per cent. in excess of the best previous year in their history. Manufacturing industries and other interests which obtain material from steel mills would be in an exceedingly unfortunate position if the Gary plant had not come in with its billet and merchant mills at the critical time, but it seems to be the general opinion that the increased capacity will be sufficient to take care of the demand from the West without subjecting buyers to any greater hardships than those now encountered.

Pig Iron.—Practically no business has been done in pig iron the past week, and it is not expected that much will be done this week in the way of actual sales. A few regular inquiries are in the market for both Northern and Southern iron in lots of 50 to 1000 tons, but the buyers do not seem anxious to close and the furnace interests are making no serious effort to get business. The pressure to sell spot iron has relaxed and the supply is either running out or the iron that reaches this market unsold is quietly taken in by a few large buyers. At any rate spot iron has almost ceased to be a subject for discussion in the trade and what little business is pending is for shipment during the first half of 1910. No business is reported in either Northern or Southern iron for delivery beyond the first half. Buyers are making no inquiry for third quarter and the furnace interests are making no serious effort to get business. Southern Ohio furnaces have been heard from again in this district, having made offers to a few buyers at a shade under $19, delivered, equal to about $16.50, at furnace. The Chicago furnaces quote $19, at furnace, switching charges for Chicago delivery adding 20c. to 50c. per ton to this price. In the last two months Southern iron has declined $1, from $15, Birmingham, to $14, or $19.35 to $18.35, Chicago. Only one or two furnaces are quoting $14 for first half. The majority are asking $14.50, Birmingham, and some still ask $15, but for the present no actual sales are reported above $14. These has been no change in the quotations of Northern iron in the Chicago market in the last three months. The business done during this period has been principally malleable Bessemer, but standard foundry grades, Lake Superior charcoal and high silicon iron have remained firm, with supply and demand about equally balanced. The following prices are for December delivery, f.o.b. Chicago:

Lake Superior charcoal	$19.50 to $20.00
Northern coke foundry, No. 1	19.50 to 20.00
Northern coke foundry, No. 2	19.00 to 19.50
Northern coke foundry, No. 3	18.50 to 19.00
Northern Scotch, No. 1	19.00 to 19.50
Southern coke, No. 1	18.85 to 19.35
Southern coke, No. 2	18.35 to 18.85
Southern coke, No. 3	17.85 to 18.35
Southern coke, No. 4	17.60 to 18.10
Southern coke, No. 1 soft	18.85 to 19.35
Southern coke, No. 2 soft	18.35 to 18.85
Southern gray forge	17.35 to 17.85
Southern mottled	17.10 to 17.60
Malleable Bessemer	19.00 to 19.50
Standard Bessemer	21.40 to 21.90
Jackson Co. and Kentucky silvery, 6%	20.40 to 20.90
Jackson Co. and Kentucky silvery, 8%	21.40 to 21.90
Jackson Co. and Kentucky silvery, 10%	22.40 to 22.90

(*By Mail.*)

Billets.—The famine in billets grows more serious. There are many inquiries in the market for forging billets on which no business can be done in Chicago. In some cases buyers have been taking billets in carloads from store to tide them over until they can make arrangements for mill shipments. Mills represented here which were taking business a month ago are dropping out one by one. Local contracts for axle billets were renewed recently at an advance of about $1 per ton, making a corresponding advance in the price of car axles. No Chicago price can be quoted on either rolling or forging billets under present conditions of the market.

Rails and Track Supplies.—No important contracts for standard sections were closed in this market last week, miscellaneous orders amounting to about 7000 tons. The Baltimore & Ohio Railroad is in the market for about 70,000 tons for next year's delivery, and it is expected that Chicago mills will get an allotment from this contract. The Western roads seem to have covered their requirements for the present, but it is not improbable that second orders will be of large proportions. In rails and track supplies there have been liberal specifications the past month and it will be difficult for the mills to make satisfactory deliveries of the business on their books. We quote standard railroad spikes at 1.80c., base; track bolts and square nuts, 2.30c. to 2.50c., base, all in carloads, Chicago. Light rails, 40 to 45 lb., $26; 30 to 35 lb., $26.75; 16, 20 and 25 lb., $27; 12 lb., $28, Chicago, less 50c. a ton on lots of 500 tons and $1 a ton on lots over 500 tons.

Structural Material.—The demand for structural and fabricated material continues to expand at a remarkable

rate, and this branch of the business bids fair to hold the record the coming year for congestion in the mills and delay in deliveries. Projects which have come into view in definite form will require over 200,000 tons of structural material for buildings and bridges, without counting the demand upon the structural mills for steel cars, shipbuilding and other requirements. Chicago architects alone have business in hand for next year which will call for at least 150,000 tons, one firm having plans under way which will require 80,000 tons. The largest contract reported for the past week, 1614 tons for new shops for the Mount Vernon Car Company, Mount Vernon, Ill., went to the McClintic-Marshall Construction Company. The Crerar-Adams Building in Chicago, 985 tons, went to the Brown-Ketchum Iron Works, Indianapolis. Amador County, California, has let a contract for bridges amounting to 300 tons to the Berkeley Steel Company, San Francisco. The State House Hotel, Sacramento, 140 tons, went to a local firm, which will obtain the steel from the Noelke-Richards Company, Indianapolis. The Utah Light & Railway Company has ordered 100 tons of transmission towers from Milliken Brothers. The Soo Line has ordered 500 tons of plate girder bridges from the Minneapolis Steel & Machinery Company. The American Bridge Company has booked 2000 tons of car axles, 300 tons of bridge material for the Indiana Harbor Belt Railroad and 270 tons of plate girder bridges for the Western Indiana Belt Railroad. Prices are firm and buyers of light structural material find it especially difficult to obtain satisfactory deliveries. We quote plain material from mill, 1.78c. to 1.88c., Chicago; from store, 2c., Chicago.

Plates.—No new business of magnitude is reported for the past week, but the mills in the Chicago District are so far behind on both sheared and universal plates that they cannot promise deliveries for several months. No important steel car business is reported for the past week, but the leading Western roads are giving serious attention to their requirements for the coming year, as they are all short of equipment. Prices remain unchanged. We quote mill prices at 1.78c. to 1.88c., Chicago; store prices, 2c., Chicago.

Sheets.—New business is keeping up at a surprising rate, and the mills are resorting to the cautious policy which was followed last fall in an effort to avoid congestion and are not accepting more business than they can handle in a satisfactory manner. Prices remain unchanged, but in some cases buyers have offered to pay a premium on blue annealed sheets to obtain prompt shipment. We quote mill prices as follows, Chicago: No. 10 blue annealed, 1.93c.; No. 28 black, 2.58c.; No. 28 galvanized, 3.68c. Prices from store, Chicago, are: No. 10 blue annealed, 2.25c. to 2.35c.; No. 28 black, 2.90c. to 3c.; No. 28 galvanized, 4c. to 4.10c.

Bars.—Specifications for December have been very heavy and there has been more new business than is usually expected at this season of the year. It is becoming a common incident of the trade for buyers to take carload lots of steel bars from store where their necessities are urgent. In bar iron new business has been light the past week, but the month has shown a satisfactory addition to the business on the books. Subject to the usual delay in delivery on soft steel bars, we quote as follows: Soft steel bars, 1.68c. to 1.78c.; bar iron, 1.60c. to 1.65c.; hard steel bars rolled from old rails, 1.58c. to 1.65c., all Chicago.

Rods and Wire.—Prices remain unchanged and buyers do not expect any further developments in this direction before February. The wire mills are well sold up for the next 60 days on most of their product, for which 60-day orders were taken prior to the recent advance. Rods are quoted at $36, Chicago. Jobbers' carload prices, which are quoted to manufacturing buyers, are as follows: Plain wire, No. 9 and coarser, base, 1.83c.; wire nails, 2.03c.; painted barb wire, 2.03c.; galvanized, 2.33c., all Chicago.

Merchant Steel.—The agricultural implement manufacturers and other buyers of merchant steel are having great difficulty in getting deliveries that will cover their requirements. Their needs have exceeded the estimates made at the time of placing their yearly contracts, and the demands on the mills from other sources have grown to such proportions that it is difficult to meet the calls from every branch of trade for larger deliveries. Buyers who have not had long established connections for merchant and special steels are in a trying position as the mills are discouraging new orders. The business done, however, is at schedule prices.

Cast Iron Pipe.—The United States Cast Iron Pipe & Foundry Company was the successful bidder on 800 tons of water pipe at Kansas City, Kan., and 1100 tons at Pontiac, Mich., last week. Other municipal business is assuming tangible form for next year's delivery, and important lettings will become more frequent soon after the first of the year. Orders from railroads for culvert pipe have been liberal the past fall and promise to be very satisfactory for the coming year. Prices remain unchanged. On current business we quote, per net ton, Chicago, as follows: Water pipe, 4-in., $28.50; 6 to 12 in., $27.50; 16-in. and up, $26.50, with $1 extra for gas pipe.

Metals.—While current business has been of only fair proportions, owing to the influence of the holidays, consumers have been buying copper on a liberal scale for January and February shipment and even into March. Lead is higher. Large consumers of spelter remain firm in their refusal to bid more than 6c., East St. Louis, but the spelter interests have been equally firm in refusing to consider this price, and 6.15c. is believed to be the best that has been done for Chicago delivery, with the price remaining 6.20c. to 6.25c. on current business. Tin continues to advance, following the New York market. We quote as follows: Casting copper, 13¼c.; lake, 13¾c., in carloads, for prompt shipment; small lots, ¼c. to ⅜c. higher; pig tin, car lots, 34¾c.; small lots, 36c. to 37c.; lead, desilverized, 4.75c. to 4.80c., for 50-ton lots; corroding, 5c. to 5.05c., for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 6.20c. to 6.25c.; Cookson's antimony, 10⅜c., and other grades, 9¾c. to 10¼c.; sheet zinc is $8 f.o.b. La Salle, in car lots of 600-lb. casks. On old metals we quote: Copper wire, crucible shapes, 13¾c.; copper bottoms, 12c.; copper clips, 13½c.; red brass, 12½c.; yellow brass, 10c.; light brass, 7c.; lead pipe, 4½c.; zinc, 5.25c.; pewter, No. 1, 23c.; tin foil, 26c.; block tin pipe, 28c.

Old Material.—But little material is on track to be disposed of at present, as dealers always anticipate a quiet period during the holidays and have held back their shipments. Steel scrap is readily disposed of and there is a good demand for malleable and other lines of material. What little wrought scrap comes into view is somewhat difficult to place with consumers, and prices of this line show no signs of immediate recovery. Inquiries are pending in the scrap market, however, from consumers who did not accumulate stocks during the heavy movement last fall, and, in view of the light supplies that are now available, higher values are anticipated early in the year to bring out material for these buyers. The following prices are per gross ton, delivered, Chicago:

Old iron rails	$20.00 to $20.50
Old steel rails, rerolling	18.00 to 18.50
Old steel rails, less than 3 ft	17.25 to 17.75
Relaying rails, standard sections, subject to inspection	23.50 to 24.50
Old car wheels	18.50 to 19.00
Heavy melting steel scrap	16.00 to 16.50
Frogs, switches and guards, cut apart	16.00 to 16.50
Shoveling steel	15.50 to 16.00

The following quotations are per net ton:

Iron angles and splice bars	$17.50 to $18.00
Iron car axles	21.50 to 22.00
Steel car axles	20.50 to 21.00
No. 1 railroad wrought	14.75 to 15.25
No. 2 railroad wrought	13.75 to 14.25
Springs, knuckles and couplers	14.75 to 15.25
Locomotive tires, smooth	18.50 to 19.00
No. 1 dealers' forge	12.50 to 13.00
Steel axle turnings	12.00 to 12.50
Machine shop turnings	10.50 to 11.00
Cast and mixed borings	7.50 to 8.00
No. 1 busheling	12.75 to 13.25
No. 2 busheling	9.75 to 10.25
No. 1 boilers, cut to sheets and rings	11.50 to 12.00
No. 1 cast scrap	14.50 to 15.00
Stove plate and light cast scrap	12.50 to 13.00
Railroad malleable	15.00 to 15.50
Agricultural malleable	13.00 to 13.50
Pipes and flues	11.50 to 12.00

St. Louis.

ST. LOUIS, December 27, 1909.

Judging from the press reports, the disbursements made by St. Louis people among the retailers during the past fortnight are a strong indication of quite general prosperity and a favorable omen for the coming year. Indications are daily being noted of building operations planned for the spring. Missouri farmers are in an exceptionally prosperous situation, since the value of farm crops for 1909 is $37,000,000 greater than the value of the crops of 1908, and this, it is expected, will stimulate general business in this section.

Coke.—The apathetic condition incident to the holiday season last week is much in evidence, no inquiries or sales of consequence being reported. Owing to the prevailing dullness, the price basis, while unchanged, is weaker, more especially on spot coke. We quote, nominally, for 72-hour standard brands of Connellsville foundry coke for prompt shipment, $3.25, and for shipment over the first half 1910, $3.50 per net ton, f.o.b. oven. A serious car shortage is reported in the New River coke field.

Pig Iron.—The principal sales agencies practically abandoned any effort to canvass for business until after New Years. Little inquiry is noted and few sales beyond carload lots are reported. It is acknowledged that resale iron is still being pressed on the market, and that in case of some Southern furnaces, the prices current for awhile back are being cut. It is believed, however, that after the turn of the year a renewal of activity will stiffen the market and bring about a cessation of offerings below the prices generally asked. Individual holders are likely to see the advantage of marketing their iron through commission houses and thus prevent the tendency to demoralize prices through apparently an excess of offerings, mainly caused by the duplication of them. One house reports sale of about 300 tons at $14.50 for shipment over the first half of 1910. We continue quo-

tations of the previous week, so far as most of the Southern furnaces authorize offerings. No. 2 foundry for shipment over the first quarter 1910, $14.50; second quarter, $15, f.o.b. furnace, Birmingham. Outside parties are offering Southern No. 2 foundry at $14.50, shipment over the first half 1910, Birmingham basis.

Lead, Spelter, Etc.—Lead is higher and in good demand at 4.62½c. Spelter is dull and unchanged at 6.12½c., East St. Louis; special brands higher. Zinc ore is $49 to $50 per ton, Joplin base. Tin is 1c. per 100 lb. higher; antimony unchanged; copper unchanged. The demand for finished metals is unexpectedly good for holiday week.

Old Material.—The leading dealers state that market conditions are unchanged from last week. There are no railroad offerings and this braces prices somewhat. Relaying rails are very scarce and wanted. The consensus of opinion is that a revival in the demand from mills and foundries will be witnessed early in the new year, and dealers do not feel disposed to force sales under present conditions and in face of the holiday season of dullness. We repeat dealers' prices as follows, per gross ton, f.o.b. St. Louis:

Old iron rails	$16.50 to $17.00
Old steel rails, rerolling	15.50 to 16.00
Old steel rails, less than 3 ft	14.50 to 15.00
Relaying rails, standard sections, subject to inspection	25.00 to 25.50
Old car wheels	17.50 to 18.00
Heavy melting steel scrap	14.50 to 15.00
Frogs, switches and guards, cut apart	14.50 to 15.00

The following quotations are per net ton:

Iron fish plates	$14.00 to $14.50
Iron car axles	20.50 to 21.00
Steel car axles	19.50 to 20.00
No. 1 railroad wrought	15.00 to 15.50
No. 2 railroad wrought	14.00 to 14.50
Railway springs	13.00 to 13.50
Locomotive tires, smooth	15.50 to 16.00
No. 1 dealers' forge	10.50 to 11.00
Mixed borings	8.00 to 8.50
No. 1 busheling	12.00 to 12.50
No. 1 boilers, cut to sheets and rings	11.00 to 11.50
No. 1 cast scrap	13.50 to 14.00
Stove plate and light cast scrap	10.00 to 10.50
Railroad malleable	11.00 to 11.50
Agricultural malleable	9.50 to 10.00
Pipes and flues	10.50 to 11.00
Railroad sheet and tank scrap	9.50 to 10.00
Railroad grate bars	10.50 to 11.00
Mchine shop turnings	10.50 to 11.00

Among new corporations is the Cohen-Schwarz Rail & Steel Company of St. Louis; capital, $100,000; incorporators: Hermann Cohen, Max P. Cohen and Selig Schwarz.

According to present plans, there will be a double track railroad between Kansas City and Chicago before the end of next year. The Atchison, Topeka & Santa Fe has been double tracking parts of its line between these two cities. J. E. Hurley, general manager, states that the second track will be built for the entire distance within 9 or 10 months.

Plans are under consideration for the development of the Tennessee Central into a larger system. Extensions will be constructed east of Harriman, Tenn., and west of Hopkinsville, Ky., and the result will be the formation of a new route from St. Louis to points in the Southeast.

The city government has passed a bill vacating six acres of streets and alleys to the Missouri, Kansas & Texas Terminal Company to facilitate the plans of this company for increasing terminal improvements.

Birmingham.

BIRMINGHAM, ALA., December 27, 1909.

Pig Iron.—Few transactions were recorded in this market during the week just ended. As a matter of fact the inquiry was so light and the aggregate of sales resulting involved tonnage of such a small volume that it cannot be definitely stated just what figures correctly represent the market price to-day. No sales have been reported at lower figures than a base of $14, Birmingham, for No. 2 foundry. It has been conceded that such a price can be made applicable to shipments covering the first quarter and that an advance of 50c. per ton would secure deliveries over the first half, but there is no confirmation of such a belief offered at this time. The largest producing interest in this district is entirely out of the market for any delivery, having sufficient orders booked to take care of the output during the first half. The second largest producing interest is not solicitious of additional orders by reason of a threatened shortage of ore of some months' duration, and the smaller concerns, in whose hands is the bulk of the tonnage for first half delivery that remains to be sold by the furnace companies, are disposed to be governed entirely by conditions presented. There is a disposition in some quarters of the trade to feel the market for deliveries further advanced than the first half, but sellers are generally noncommittal as to such engagements and inquiries of this kind hardly have serious consideration. Statistics from producers on January 1 will probably show a material reduction in accumulations in furnace yards during the month of December. However, the same cannot be said of the tonnage held by merchant interests, and founders will in all probability resume operations after the holidays with a larger supply of raw material on their yards than has been recorded for some years. The production has been reduced by the blowing out of two furnaces because of ore shortage. The shortage is the result of difficulties experienced in mining that are likely to extend to the properties of concerns whose operations are so far unaffected and a further reduction in the total output is not improbable.

Cast Iron Pipe.—It is understood that a contract covering 7000 tons of water pipe for the city of Dallas, Texas, was awarded the United States Cast Iron Pipe & Foundry Company during the past week. It is also understood that 2500 tons of water pipe for the city of Fort Worth, Texas, was placed with the Dimmick Pipe Company. The contract for Minneapolis, Minn., previously mentioned, was placed with the Sheffield Cast Iron Pipe Company, Sheffield, Ala. Several lots of 750 to 1000 tons each have recently been placed, for which the American Cast Iron Pipe Company was the most successful bidder. The prices at which the contracts mentioned above were placed are not made public. It is understood, however, that lower prices were made in Texas by Alabama concerns than would have been made ordinarily by reason of a desire to re-enter that territory. It is conceded by local producers that recent lettings have been of such volume as to place all producers in comfortable circumstances as to orders and that little additional business will be solicited at prices now asked, notwithstanding existing conditions in the pig iron market. We quote water pipe as follows, per net ton, f.o.b. cars here, which quotations are believed to correctly represent the market: 4 to 6 in., $26; 8 to 12 in., $25; over 12 in., average, $24, with $1 per ton extra for gas pipe.

Old Material.—Dealers do not report recent developments of interest. One or more material additions have been made to stocks during the week and the outlook is considered good. The demand at present is rather desultory, but no concessions in prices are yet being made. Indications are now favorable for a resumption of operations at all plants in this district shortly after January 1, with the exception of the Birmingham Rolling Mill which has been dismantled. We quote dealers' asking prices as follows, per gross ton, f.o.b. cars here:

Old iron axles	$20.00 to $20.50
Old iron rails	16.00 to 16.50
Old steel axles	19.00 to 19.50
No. 1 railroad wrought	14.50 to 15.00
No. 2 railroad wrought	12.00 to 12.50
No. 1 country wrought	11.50 to 12.00
No. 2 country wrought	11.50 to 12.00
No. 1 machinery	13.00 to 13.50
No. 1 steel	12.25 to 12.75
Tram car wheels	12.50 to 13.00
Standard car wheels	14.50 to 15.00
Light cast and stove plate	10.50 to 11.00
Cast borings	6.50 to 7.00

Philadelphia.

PHILADELPHIA, PA., December 28, 1909.

Business was brought practically to a standstill the past week. The usual holiday dullness was anticipated, but the blizzard which struck this section at the close of last week intensified it. Business was tied up completely for several days and it will take, no doubt, the best part of the week to get transportation facilities back to normal. The movement in pig iron has been light. A fair amount of new business has been done in some classes of finished materials, although specifications on old contracts continue very heavy. A better demand for coke is reported, particularly for prompt shipment, as delays in delivery on contract furnace coke have forced producers in one or two instances to bank their furnaces on account of lack of supplies. The old material market continues dull.

Pig Iron.—There has been little movement in the foundry grades; a few sales of small lots for early delivery, at unchanged prices, are reported; a little further inquiry, however, has developed for extended requirements. At this season the trade does not anticipate any heavy buying movement, the disposition being to defer business until after the turn of the year. In the absence of any material demand prices are unchanged. No effort is being made by producers to force business, to do which would, no doubt, result in a softening of prices. Deliveries are being taken freely on all grades, and in a few instances shipment of iron for forward account is being urged. Virginia foundry grades have been quiet; occasional sales of small lots, ranging from carloads to 100 tons, for early delivery, made up the bulk of the week's business. Prices continue firm and unchanged. A few sales of Southern foundry iron are reported, one lot of 500 tons of No. 3, for delivery in the next 60 days, being announced. Southern No. 2 foundry can easily be done at $14, Birmingham, for first quarter. A better demand for forge iron is noted; one sale of 1000 tons, for early delivery, at $17.50, furnace, is reported, while several small lots were also sold at prices close to $17.75, delivered in this vicinity. No change has developed in the

basic situation; for immediate consumption buyers are, as a rule, pretty well taken care of, although in a few instances deliveries are again being urged. Sellers are pretty well booked up as far as the near future is concerned, and are maintaining firmly the recently established $18.75, delivered, basis. Inquiries for low phosphorus pig are still before the trade, while sales of some 3000 tons of 0.035 iron have been made for Western shipment at prices equal to those within the range of current quotations. No change is noted in foreign iron, although one cargo of Middlesbrough iron is expected to arrive in the near future. The general market situation is a little stronger, although hardly enough business has been done in some lines to establish a market. For shipment during the first half of 1910 the following range of prices is named for deliveries in buyers' yards, eastern Pennsylvania and nearby points:

Eastern Pennsylvania, No. 2 X foundry	$19.00
Eastern Pennsylvania, No. 2 plain	$18.50 to 18.75
Virginia, No. 2 X foundry	19.00 to 19.25
Virginia, No. 2 plain	18.50 to 18.75
Gray forge	17.75 to 18.00
Basic	18.75
Low phosphorus	22.75 to 23.25

Ferromanganese.—There has been no demand and prices are nominally quoted at $45 to $45.50, Baltimore, for delivery in the first half of next year.

Billets.—A very satisfactory volume of business, considering the season, is coming out. Moderate orders for ordinary rolling steel, for first quarter shipment, continue to be taken at $30, Eastern mill, while specifications on previous orders are being freely received. A better demand for forging billets is noted, one sale of 1500 tons, for first quarter shipment, being reported at $34, Eastern mill.

Plates.—There has been a good run of new business, in some instances running into pretty fair sized lots. Specifications on old contracts have been heavy and the majority of the mills have more orders on their books than they can well take care of. Makers, as a rule, still refuse to accept orders on which deliveries extend beyond the first three months of next year. The market is strong and prices are firmly maintained at 1.75c. to 1.80c. for ordinary plates delivered in this vicinity.

Structural Material.—The market has been rather quiet, as is generally to be expected at this time. A fair volume of miscellaneous business has been taken, but none of the larger propositions under consideration have been closed. The market is well maintained and deliveries on some sizes are still considerably delayed. Prices are firm, 1.75c. to 1.80c, being named for plain shapes, delivered in this territory.

Sheets.—Mills in this territory are nearly all shut down for the holidays and usual year end inventories, and will hardly get in operation before January 3. The demand continues good and order books are generally in pretty satisfactory shape. Prices for forward shipments are unchanged, while prompt deliveries still command a premium. For delivery in the first quarter of next year the following range of prices is named: Nos. 18 to 20, 2.70c.; Nos. 22 to 24, 2.80c.; Nos. 25 and 26, 2.90c.; No. 27, 3c.; No. 28, 3.10c.

Bars.—Not a great volume of new business has come out, although specifications are coming in freely in order to get the benefit of lower priced contracts, which expire with the year end. Mills have, in most cases, suspended for the holidays, although some expect to get in operation in a few days in order to keep up with the demand. Prices are pretty well maintained, ranging from 1.65c. to 1.75c. for refined iron bars for early delivery, while steel bars, on which prompt shipment cannot be had, are quoted at 1.65c. to 1.70c., delivered in this territory.

Coke.—With unfavorable weather conditions during the greater part of the week, delays in delivery have increased, and a better demand for prompt shipment has developed. Under existing conditions the market has hardened slightly, but quotations, on the whole, are unchanged. Standard grades are pretty well maintained, but less well known brands can be had at a concession of about 10 cents a ton. For delivery in this vicinity during the early portion of next year the following range of quotations is named per net ton:

Connellsville furnace coke	$4.75 to $5.00
Foundry coke	5.25 to 5.50
Mountain furnace coke	4.35 to 4.60
Foundry coke	4.85 to 5.10

Old Material.—The market is practically at a standstill. Very little movement is to be noted in any grade, a waiting attitude being maintained by both buyers and sellers. Were it not for the fact that consumers were well taken care of, the existing weather conditions would undoubtedly have a tendency to advance the market. The associated steel mills maintain their $17, delivered, offering price for No. 1 heavy melting steel, but get no tonnage at the figure, outside mills and brokers paying an advance over that figure. No business of importance has been transacted in the rolling mill grades. Prices named for delivery in buyers' yards, eastern Pennsylvania and nearby points, continue to be nominally quoted as follows:

No. 1 steel scrap and crops	$17.00 to $17.75
Old steel rails, rerolling	18.00 to 18.50
Low phosphorus	23.00 to 23.50
Old steel axles	24.00 to 25.00
Old iron axles	30.00 to 31.00
Old iron rails	20.50 to 21.50
Old car wheels	17.50 to 18.00
Choice No. 1 R. R. wrought	19.50 to 20.00
Machinery cast	17.50 to 18.00
Railroad malleable	16.50 to 17.00
Wrought iron pipe	16.50 to 17.00
No. 1 forge fire scrap	16.00 to 16.50
No. 2 light iron	10.75 to 11.25
Wrought turnings	14.25 to 14.75
Stove plate	13.25 to 13.75
Cast borings	12.00 to 12.50
Grate bars	14.50 to 15.00

Cleveland.

CLEVELAND, OHIO, December 28, 1909.

Iron Ore.—It is definitely announced by representatives of several leading ore firms that the advance on the non-Bessemer ores will be 50c. a ton and that the market is being established at the new price. This advance is the same as made on Bessemer ores, as announced three weeks ago. There had been considerable uncertainty regarding the size of the advance on non-Bessemer, a price ranging from 30c. to 50c. above the 1909 price having been under consideration. Some Bessemer contracts have been closed at the new prices, but as far as can be learned no non-Bessemer tonnage has as yet been actually contracted for by local firms at the new price. It is reported, however, that a Pittsburgh interest has closed contracts for considerable non-Bessemer tonnage in that district at the new price. Local ore firms state that they will now begin to make contracts for non-Bessemer. A meeting of the leading ore firms may be held next week to establish the price formally, although it is possible that it will be regarded by that time that the new prices are so well fixed that no meeting will be held. Considerable tonnage of non-Bessemer ore has already been reserved, and with the uncertainty regarding prices out of the way an active buying movement is expected to set in. As previously announced, the guarantee of iron content of 55 per cent. on Bessemer ore and 51.50 per cent. on non-Bessemer ore will remain unchanged. We quote prices for 1910 as follows: Old Range Bessemer, $5; Mesaba Bessemer, $4.75; Old Range non-Bessemer, $4.20; Mesaba non-Bessemer, $4.

Pig Iron.—The soft spots that have developed in the foundry iron market the past week or two have had the effect of bringing out a good volume of inquiries from consumers who have not yet bought or who are only partially covered for their first half requirements. Although some makers are quoting slightly lower prices, the concessions that have been offered have not as yet resulted in the booking of more than a small tonnage. A large share of the inquiries appear to be market feelers, and consumers that actually intend to buy are going slow in placing their orders. Several inquiries have come in for deliveries extending through the third quarter and even through the entire last half, but furnaces decline to quote for delivery after July 1. Among the inquiries is one from a local consumer for from 1000 to 6000 tons of foundry iron for the last half; one from a Mansfield, Ohio, manufacturer for 700 tons of No. 2 and 300 tons of No. 1 for the first half, and one from Erie, Pa., for 500 tons of No. 2 for the second and third quarters. With the present demand and outlook furnace interests regard the situation as quite satisfactory and several are refusing to shade recent quotations. Stocks in yards have become pretty well cleaned up and the output is being taken as fast as made. Many foundries have consumed considerably more iron during the present quarter than it was expected they would need, as is shown by frequent requests to have January shipments anticipated. While a more active market is looked for after the first of the year, a heavy buying movement is not expected because of the large tonnage already on the books for first half delivery. It is estimated that about 75 per cent. of the foundry iron needed in this district for the first half has already been contracted for. No. 2 foundry is quoted at $17, Valley furnace. Local furnace interests have not made any further reduction in their price for Cleveland delivery, continuing to quote No. 2 at $18, delivered, but to meet outside competition are shading their price to $17.50, at furnace. For prompt delivery and first quarter we quote, delivered, Cleveland, as follows:

Bessemer	$19.90
Northern foundry, No. 1	$18.40 to 18.65
Northern foundry, No. 2	17.90 to 18.00
Northern foundry, No. 3	17.40 to 17.65
Gray forge	17.25 to 17.40
Southern foundry, No. 2	18.35
Jackson County silvery, 8 per cent. silicon	20.55

Coke.—A local interest that has been in the market for its requirements for the first half expects to close contracts in a day or two for about 10,000 tons of furnace coke per month. Prices remain about stationary, although there are weak spots in the market. Foundries are about all covered for their first half requirements. We quote standard Connellsville furnace coke at $2.70 to $2.80 per net ton, at

oven, for first half delivery. Connellsville 72-hour foundry coke is held at $3.15 to $3.25 for spot shipment and $3.25 to $3.50 on contract.

Finished Iron and Steel.—The holiday lull has been apparent. Orders have fallen off all round. Specifications have been mostly from consumers who had not previously sent in orders for material on contracts that expire January 1. In about every case the last ton of material coming to a buyer under an expiring contract has been specified for. A large share of these specifications came in early in the month and since then there has been a gradual let-up. The bulk of the specifications was for steel bars. While deliveries appear to be no better than they were, some of the mills are rearranging their schedules and hope to be able to make more satisfactory shipments shortly. In spite of the easing up of the demand prices are very firm and consumers willingly pay the premium prices that have prevailed for the past few weeks for steel bars, plates and structural material for prompt shipment. Inquiries have come in for a considerable tonnage of steel bars for the first and second quarter, but a number of the mills will not be in a position to take on additional contracts for some time. We quote steel bars at 1.45c. to 1.50c., Pittsburgh, for future delivery, nearly all of the mills holding firmly to the latter price, and plates and structural material at 1.60c., Pittsburgh. For prompt shipment steel bars are quoted at 1.60c., Pittsburgh, and higher. The demand for iron bars continues fairly active and local mills are well filled up. We quote iron bars at 1.60c. to 1.65c., Cleveland, the former price being shaded in some cases to meet competition in shipments to outside points. Heavy specifications for steel bars for first quarter requirements have been placed by local rivet manufacturers. The leading interest has taken a contract from the American Shipbuilding Company for 2000 tons of plates and shapes for a new lake boat, and two orders for sheet steel piling aggregating 430 tons. The structural situation continues quiet, although considerable work is expected to come out soon after the first of the year. The Riverside Bridge Company, Wheeling, W. Va., has taken the contract for the structural steel for the Second National Bank building, Akron, Ohio, 1500 tons. The demand for sheets is holding up well, and mills able to make early deliveries are asking premiums of $2 to $4 a ton. There is some demand for light rails, but prices are not being firmly maintained because of the competition of mills making rerolled rails. Warehouse business of jobbers shows the usual falling off of the holiday season.

Old Material.—Mills and foundries are holding back on shipments until after inventories are taken and the only transactions reported are in small lots, usually carloads. Mills are not inquiring for scrap for delivery after the first of the year, so that not much activity is expected in the early part of January. Dealers, as a rule, have good sized stocks on hand and are playing a waiting game, not desiring to load up any heavier, or to sell at present prices. Although prices are weak quotations remain about stationary. Prices, per gross ton, f.o.b. Cleveland, are as follows:

Old steel rails	$16.25 to $16.75
Old iron rails	20.00 to 20.50
Steel car axles	20.50 to 21.00
Old car wheels	17.00 to 17.50
Heavy melting steel	16.00 to 16.50
Relaying rails, 50 lb. and over	22.50 to 23.50
Agricultural malleable	14.50 to 15.00
Railroad malleable	16.50 to 17.00
Light bundled sheet scrap	11.00 to 11.50

The following prices are per net ton, f.o.b. Cleveland:

Iron car axles	$21.00 to $21.50
Cast borings	8.75 to 9.00
Iron and steel turnings and drillings	10.50 to 10.75
Steel axle turnings	12.00 to 12.50
No. 1 busheling	14.00 to 14.50
No. 1 railroad wrought	16.50 to 17.00
No. 1 cast	14.50 to 15.00
Stove plate	12.00 to 12.50
Bundled tin scrap	11.00 to 11.50

Cincinnati.

CINCINNATI, OHIO, December 22, 1909.—(*By Telegraph.*)

In local iron and steel markets the year is ending satisfactorily. Requests for hold-ups are very few, and most manufacturing establishments are on full time, with practically normal forces. Large tool and machinery manufacturing enterprises are more than busy with the annual end of the year stock taking and cleaning up process, and are preparing to comply with the new tax law requirements, which impose a 1 per cent. tax on net profits of the year beginning January 1.

Pig Iron.—Southern producers seem to have settled on $14, Birmingham, for No. 2 foundry for the first three and four months of the year, although the possibilities for $14 iron in the second quarter are limited and growing less as January 1 approaches. Almost uniformly $14.50 is asked for second quarter iron. Northern producers are still quoting $17, Ironton, for No. 2, but this price may be obtained for the entire half. Some inconvenience has been occasioned furnaces in Ohio by delays on coke shipments. Southern charcoal has been a good seller, one leading interest reporting itself sold up for first quarter at $22, Birmingham. Lake Superior charcoal malleable has also been in good demand, some sales ranging from 200 to 2000 tons in contract with manufacturers in Michigan, Kentucky and Illinois for first quarter and half. A Kentucky car wheel manufacturing concern bought 200 tons; a Michigan engine and thresher manufacturer has taken 500 or 600 tons of Northern malleable, and another large Michigan user of malleable that wants 2000 tons or more bought 500 tons last week and is still figuring. The largest local inquiry to-day is from a manufacturer of house heating furnaces. He would take 1000 tons each of Northern and Southern for the first half. A distinctive feature of the year's trade has been the remarkable demand for ferrosilicon. The increase in consumption in the past two years has been fully 300 per cent., the past few months of activity in steel making giving it an added impetus. This is quotable at $62.50, delivered at consumers' works east of the Mississippi River. It is probable that a large local agency will make ferrosilicon a feature of its chain of offices. A northeastern Ohio manufacturer would take 1000 tons of No. 2 foundry, either Northern or Southern, for the first half. A good demand is noted to-day from Chicago territory, mostly in small lots for the first quarter. The melt is holding up exceedingly well during the holidays and the trade is confidently expecting a revival all along the line after the turn of the year. Some high manganese is selling on a basis of about $16, Virginia furnace. One lot of 500 tons of Southern No. 2 was sold to-day for second quarter delivery at $14.50; another lot of 250 tons of analysis iron for same delivery at $14.75. The larger local agencies report a better business, taking the entire list into consideration, than a week ago. For immediate delivery and first quarter, based on freight rates of $3.25 from Birmingham and $1.20 from Ironton, we quote, f.o.b. Cincinnati, as follows:

Southern coke, No. 1 foundry	$17.75 to $18.25
Southern coke, No. 2 foundry	17.25 to 17.75
Southern coke, No. 3 foundry	16.75 to 17.25
Southern coke, No. 4 foundry	16.50 to 16.75
Southern coke, No. 1 soft	17.75 to 18.25
Southern coke, No. 2 soft	17.25 to 17.75
Southern gray forge	16.50 to 16.75
Southern mottled	16.50
Ohio silvery, 8 per cent. silicon	20.20
Lake Superior coke, No. 1	18.70
Lake Superior coke, No. 2	18.20
Lake Superior coke, No. 3	17.70
Standard Southern car wheel	24.75 to 25.25
Lake Superior car wheel	21.75 to 22.25

(*By Mail.*)

Coke.—The sudden stress of wintry weather, especially severe in the Central States, has affected coke shipments, and several furnaces are seriously handicapped, two or three finding it necessary to bank for 12 to 24 hours. This is for the greater part confined to Ohio furnaces. The holidays have made rather serious inroads on production at the ovens. All shipments have been delayed. There is practically no spot coke in transit, and little or none for sale save in the Connellsville District. On contract the range for Connellsville 48 hr. grades is $2.80 to $3 per net ton at oven and there is so little contracting in Wise County just now that a reliable price is difficult to quote. Wise County foundry brands are quotable at $3 to $3.25, either spot or contract. Pocahontas grades are selling at $2.75 to $3 for foundry for nearby delivery, and furnace coke at about $2.65.

Finished Material.—Invoicing will be very general here during the holiday weeks. Business is quiet, but prices are firm, particularly for sheets and plates. A tremendous lot of concrete work is in prospect for the early year, and twisted steel bars are already beginning to show an activity not previously attained in this market, although that type of building construction has long been very popular here. Steel for this character of building is selling in quantity at 2c. for base sizes (¾ in. and larger), with a premium of 10 to 15 cents per 100 lb. in small lots. Iron bars are a trifle weak, the price quoted being 1.60c., Cincinnati, and out of stock 1.80c. There will be no change in the local management of the Globe Rolling Mill Company, which has been formally taken over by the Bourne-Fuller Company, Cleveland. This change was effected last August, but the formal transfer will be made as of January 1. Bids are going in to-day on the American Rolling Mill Company's specifications for its new buildings at Middletown, which will require about 4500 tons. Mills in this market are busy invoicing. One of these, making special sheets, reports an unusually good run of orders, with some of the large buyers specifying on January, February and March deliveries. This is taken to mean a confidence in the new year markets and that prices will be stiffer. The new open hearth furnace of the Newport Rolling Mills is expected to be ready for use by February, the weather conditions retarding the work a bit for the present. Steel bars are quotable here at 1.60c., Pittsburgh, and dealers are getting 1.90c. from stock.

Old Material.—There are some scattering inquiries for melting steel and select brands of railroad wrought, but as a rule the scrap markets are lifeless. Dealers are anticipating a general demand for all grades of old material some time during the first quarter. Machinery cast is quiet, feeling the weakness of the pig iron markets, and dealers are, as a rule, willing to contract on the present basis of iron. An offer of about $18, gross ton, was made to-day by an up the State steel maker for 1000 tons of heavy melting steel, which would bring the Cincinnati price to around $15.50. Weather conditions have affected railroad offerings of scrap, which cannot be handled now because of the snow and adverse weather. Some of the large dealers are predicting $16.50 to $17 for select No. 1 railroad wrought in January. Considering the inactivity of the market, it is difficult to quote understandingly, but the following prices, f.o.b. Cincinnati, are given as nearly representative of conditions as can be secured:

No. 1 R. R. wrought, net ton	$15.00 to $15.50
Cast borings, net ton	8.00 to 8.50
Heavy melting steel scrap, gross ton	15.00 to 15.50
Steel turnings, net ton	9.50 to 10.00
No. 1 cast scrap, net ton	13.00 to 13.50
Burnt scrap, net ton	10.00 to 10.50
Old iron axles, net ton	18.50 to 19.00
Old iron rails, gross ton	18.00 to 18.50
Old steel rails, short, gross ton	15.00 to 15.50
Old steel rails, long, gross ton	16.00 to 16.50
Relaying rails, 56 lb. and up, gross ton	22.50 to 23.00
Old car wheels, gross ton	15.00 to 15.50
Low phosphorus scrap, gross ton	17.50 to 18.00

Buffalo.

BUFFALO, N. Y., December 28, 1909.

Pig Iron.—The market is still experiencing the lull in buying usually apparent during the midwinter holiday season. Quite a number of inquiries are coming up, however, for new business for first and second quarter deliveries, a good many of them being for supplementary orders to replace advance deliveries specified lately on 1910 contracts. A pronounced feature of the market is the urgency with which anticipated 1910 deliveries are called for. Shipments from furnaces are limited only by the ability of the producers to forward material. The demand for basic is strong, but sales are restricted, owing to producers in this district being sold up for several months ahead. Prices on all grades are firmly held, with a slightly higher tendency, and furnacemen are not anxious to quote for extended deliveries. The following schedule fairly represents the market for first and second quarter deliveries per gross ton f.o.b. Buffalo.

No. 1 X foundry	$17.50 to $18.00
No. 2 X foundry	17.25 to 17.75
No. 2 plain	16.75 to 17.25
No. 3 foundry	16.50 to 16.75
Gray forge	16.25 to 16.50
Malleable	17.50 to 18.00
Bessemer	19.25 to 19.75
Basic	18.25 to 18.75
Charcoal	20.50 to 21.00

Finished Iron and Steel.—There has been a noticeable slowing down in the placement of orders for bars and plates and other lines of finished steel products, due to the holiday season and the end-of-the-year stock taking, and specifications on contracts have not been as heavy for the same reason. A good deal of business in fabricated lines has developed during the week, with indications that an unusually large amount of new building requiring structural material will be started during the winter and the early spring. Specifications will shortly be ready for bids for the steel for an addition to the Otis Elevator Company's Buffalo plant, about 500 tons; also for the new plant of the King Sewing Machine Company, Buffalo, requiring a large tonnage. Plans are nearly ready for the addition to the Snow Steam Pump Company's plant, Buffalo, about 100 tons, and bids will be received the middle of January. Plans are also being prepared for a linseed oil mill to be erected at Edgewater, N. J., by the Spencer-Kellogg Company of Buffalo, taking 250 tons of steel. Esenwein & Johnson, local architects, are to receive bids about January 1 for structural steel for a 10-story hotel to be built at Peoria, Ill., by the Peoria Hotel Company, requiring about 600 tons, and for a seven-story hotel for the Akron Hotel Company, Akron, Ohio, about 500 tons; also for a large hotel at Steubenville, Ohio. Contract for the steel for the Buffalo Brewing Company's plant, mentioned in previous reports, was awarded to the Kellogg Iron Works of this city. The Lackawanna Steel Company will furnish the steel for the Statler Hotel annex, Buffalo, 700 tons, for which the Buffalo Structural Steel Company has the contract for fabrication and erection. Lupfer & Remick, Buffalo, were low bidders for the Georgia street bridge over the Erie Canal, in this city, requiring 120 tons. The steel for the new plant of the Aluminum Castings Company, Buffalo, about 200 tons, has been awarded to the McClintic-Marshall Construction Company, Pittsburgh. The Lackawanna Bridge Company, Buffalo, has received contract for fabrication and erection of the steel, 350 tons, for a large machine shop for the Buffalo Foundry & Machine Company, the steel to be furnished by the Lackawanna Steel Company. The Lackawanna Bridge Company, which has just completed its plant in this city, announces that it will make a specialty of structural stock and will carry a stock of 10,000 to 20,000 tons of plates, shapes, &c.

Old Material.—The holiday week has been one of pronounced quiet in scrap materials, with little trading in any line. All mills in this district are fairly well supplied for their requirements for the next 30 days at least, and no resumption of buying is anticipated until after the inventory period has passed. Dealers' prices, which are about the same as last week, and mostly nominal, are as follows, per gross ton, f.o.b. Buffalo:

Heavy melting steel	$16.50 to $17.00
Low phosphorus steel	20.00 to 21.00
No. 1 railroad wrought	17.75 to 18.00
No. 1 railroad and machinery cast scrap	16.50 to 17.00
Old steel axles	20.50 to 21.00
Old iron axles	26.00 to 26.50
Old car wheels	17.50 to 18.00
Railroad malleable	17.00 to 17.50
Boiler plate	14.50 to 15.00
Locomotive grate bars	13.00 to 13.50
Pipe	14.00 to 14.50
Wrought iron and soft steel turnings	11.00 to 11.50
Clean cast iron borings	9.00 to 9.50
No. 1 busheling scrap	14.00 to 14.50

The German Iron Market.

BERLIN, December 16, 1909.

The iron markets have been quieter than usual, but the upward tendency of prices continues. Last week the temporary price arrangement in the bar trade was continued to the end of next year, and at the same time the minimum price of bars was further advanced to 106 marks. Yesterday Cologne and Düsseldorf dealers announced an advance of 5 marks a ton on bars, plates, and band iron, to take effect at once; and to-day it is reported that the combination of Berlin dealers is also about to mark up prices.

The news from the great Rhenish-Westphalian District, however, is somewhat conflicting. The leading newspaper of Essen to-day prints a market review that makes a rather unfavorable contrast with other reports. It says that specifications are coming in unsatisfactorily in view of the big orders on hand, and that the works are under the necessity of urging buyers to take goods already ordered. From this state of things this newspaper concludes that the wholesale dealers placed much larger contracts several months ago than their prospective needs, and are now not willing to take deliveries. It even says that dealers are underbidding manufacturers' prices, which is in direct contradiction with the news reports summarized in the first paragraph above. Nevertheless, even this newspaper reports that manufacturers and dealers alike are looking forward to a further improvement of business next spring.

The upward tendency of prices also continues in Belgium. The Comptoir des Aciéries Belges, which is the name of the combination of steel producers of that country, has just voted an increase of 3 francs a ton on all forms of semi-manufactured steel material, to take effect January 1.

The manufacturers of thinner qualities of plates held a meeting several days ago and took steps looking toward forming a price arrangement similar to that recently organized for the bar trade. A Dortmund dispatch reports that the international convention for wire and wire products will meet in a few days and will probably adopt a higher scale of prices for next year. The arrangements for organizing a German wire nail syndicate have been delayed owing to difficulties raised by South German makers, but another meeting on the subject will be held within a few days.

An iron manufacturer writes to the Cologne *Gazette* in reference to American iron ore purchasers in Europe. After expressing the view that American buyers will henceforth appear regularly in the European markets in quest of ores whenever trade is on a boom in America, he goes on: "The American buyers, of course, avail themselves of the low prices prevailing, in order to supplement their home resources as far as possible. They have done so this year. But just as soon as the ore markets show medium prices, and especially when high prices prevail, as is now the case, the Americans will no longer have any advantage in buying in Europe and will drop out of competition. The near future will probably confirm this. There is, therefore, no special ground for the nervousness of the German manufacturers about buying ores, especially as many mines are still holding back with their sales in the hope of getting better prices later on, although it must be admitted that the entire product of the Swedish mines has been sold out. The further advance of our ore prices, however, is hardly to be expected, for our furnacemen cannot afford to pay higher prices in view of the extraordinarily low prices of pig, and they will prefer to keep their output within moderate limits rather than to smelt ores at a loss owing to their high prices."

Pittsburgh.

PARK BUILDING, December 29, 1909.—(*By Telegraph.*)

Pig Iron.—New inquiry for pig iron in the past week has been more active, and this is regarded as a forerunner to an increased demand, which is expected to develop early in January. There have been several fair sized transactions in basic iron for first quarter delivery, aggregating 6000 to 8000 tons at $17, Valley furnace. Reports were current here during the week that several lots of basic had sold at $16.75, at furnace, but these are not verified. It is the general belief here that the output of pig iron at the present tremendous rate has caught up and passed the rate of consumption and that prices of pig iron will not be any higher in the near future. We note a sale of about 3000 tons of Bessemer iron to a local consumer for first quarter delivery at $19, Valley furnace. There is but little inquiry for foundry or forge iron, and prices on both these grades are softer, but not as yet actually lower. We quote standard Bessemer iron, $19, for delivery over first half of next year; basic, $17, for delivery in first quarter; malleable Bessemer, $17.25; No. 2 foundry, $17, and gray forge, $16.50, all at Valley furnace, the freight rate to the Pittsburgh District being 90c. a ton.

Steel.—New buying is not heavy in Bessemer billets or sheet or tin bars, most consumers being already covered for the first two or three months of next year on contracts on a sliding scale basis. Some small lots of billets and sheet and tin bars are being offered for resale by consumers through dealers at slightly lower prices than the mills are naming. Steel mills quote $27.50 for Bessemer billets and $28 to $28.50 for open hearth, maker's mill. On sheet and tin bars for first quarter $29, at maker's mill, is regarded as the market. Forging billets are scarce and firm at $31 to $32, maker's mill, and small lots for prompt shipment are sold at the latter price.

(*By Mail.*)

The last week of the year finds the iron trade very quiet as regards new orders, but specifications against contracts have come in freely all this month, due partly to the fact that a good many of these contracts expire December 31, when all unspecified tonnage will be canceled. Some of these orders were taken back as far as May and June of this year and at prices considerably lower than are ruling now, which will explain why customers are so anxious to take the tonnage out. The pig iron market continues somewhat quiet, but new inquiry has improved, and it is believed there will be a more liberal buying movement after the first of the year. The market on basic pig iron is firmer, due to some fairly large recent purchases, and $17, Valley furnace, is absolute minimum for prompt basic iron, while for first quarter and first half $17.25 to $17.50 is quoted. There is still more steel available than a month or two ago, some of the dealers offering billets and sheet and tin bars for resale, but in small lots. The price of sheet and tin bars for first quarter seems to be regarded as $29, at maker's mill. Finished iron and steel are moving out of the mills very freely, but mostly on specifications against old contracts, new orders for some time having been light. Prices all along the line are fairly firm, with the exception of coke, which has slumped off to some extent. A new card of discounts on steel pipe will be put into effect by the leading mills on January 1, which marks a radical change in present methods of quoting this commodity.

Ferromanganese.—There has been little new buying in this market for some time, consumers evidently being well covered. Prices are only fairly strong, and we quote 80 per cent. foreign at $44.50 to $45, seaboard, for first quarter and $45 to $46 for first half, the freight rate to Pittsburgh being $1.95 a ton.

Ferrosilicon.—A sale of 300 tons for first three months of next year for shipment outside the Pittsburgh District is reported at a price equal to about $63, Pittsburgh. New inquiries are quiet and prices seem to be weaker. We quote 10 per cent. at $23.90; 11 per cent., $24.90; 12 per cent., $25.90, and 50 per cent., $62.50 to $63, Pittsburgh, for prompt shipment.

Muck Bar.—No new inquiries have developed, but prices are firm. We quote best grades of muck bar in long lengths made from all pig iron at $30 and light bar cut to lengths at $30.25, Pittsburgh. Higher prices are predicted shortly after the first of the year.

Wire Rods.—The two leading makers are reported as practically out of the market as sellers of rods, the available supply for prompt shipment being limited. Prices are strong. We quote Bessemer, open hearth and chain rods at $33 to $33.50, Pittsburgh.

Skelp.—Mills rolling both iron and steel skelp have caught up on back orders to some extent and can make quicker deliveries. This is always the dull season of the year in the skelp trade, and the present quietness in new demand is not unexpected. We quote grooved steel skelp at 1.50c. to 1.55c.; sheared steel skelp, 1.60c. to 1.65c.; grooved iron skelp, 1.75c. to 1.80c., and sheared iron skelp, 1.90c., all for ordinary widths and gauges, f.o.b. Pittsburgh.

Steel Rails.—Practically nothing is being done by the railroads in placing contracts for standard section, only an occasional small order coming out. It is still claimed that none of the leading railroads has bought enough rails to cover requirements for next year and that practically all of them will have to place more orders in the early part of next year. The new demand for light rails is active and in the past week the Carnegie Steel Company took new orders for close to 3000 tons. We quote steel axles at 1.75c. to 1.80c., and splice bars, 1.50c., at mill, Pittsburgh. Light rail prices are as follows: 8 to 10 lb., $32; 12 to 14 lb., $29; 16, 20 and 25 lb., $28; 30 and 35 lb., $27.75, and 40 and 45 lb., $27, Pittsburgh. These prices are for 250-ton lots and over, and for small lots premiums of 50c. per ton and more are being paid. We quote standard sections at $28, at mill

Plates.—A moderate amount of new car buying is still being done by the railroads and the larger steel car interests are pretty well filled up for the first three or four months of next year. The Duluth & Iron Range and the Duluth, Missabe & Northern railroads have placed orders for 1500 steel ore cars, to be built by the Standard Steel Car Company at its new shops at Hammond, Ind. The order was placed with the Summers Steel Car Company of this city, which has no car shops of its own, and was turned over by it to the Standard Steel Car Company. The Duluth & Iron Range bought 800 of this type of cars earlier in the season, and it is claimed recently loaded 11,000 tons of ore in them in 39 minutes, which is claimed to be the record for fast loading of ore. The Isthmian Canal Commission is in the market for 250 50-ton steel dump cars, to be air operated, bids closing on January 4. The Cincinnati, Hamilton & Dayton Railroad is in the market for 1500 freight cars with steel underframes. The leading plate mills are pretty well filled up with orders for the first three months of next year and plates for prompt shipment still command slight premiums. We quote ¼-in. and heavier plates at 1.55c. in large lots and 1.60c. in small lots.

Structural Material.—Local fabricating interests report new inquiries rather quiet, but expect a more active market after the first of the year. No local contracts of moment have been placed lately, but the structural concerns are pretty well filled up with work for the first three or four months of next year. Prices are firm. We quote beams and channels up to 15 in. at 1.55c., at mill, while small lots for spot shipment continue to bring 1.60c. to 1.65c., at mill.

Tin Plate.—The new demand has quieted down very much as it always does at this season, but the leading mills are pretty well filled up with orders for the first half of 1910. The American Sheet & Tin Plate Company continues to operate a little more than 80 per cent. of its serviceable tin mill capacity. Prices are firm and we continue to quote 100-lb. cokes at $3.60 per base box, f.o.b. Pittsburgh, for delivery in first half of next year.

Sheets.—While the new demand has lessened considerably, the mills are filled with orders through the first quarter of the year, consumers specifying freely against contracts. Shipments by the mills this month will probably be a record breaker, as a number of contracts expire December 31, and buyers are hurrying in specifications for fear of cancellation. Prices on sheets are firm. We quote: Blue annealed sheets, Nos. 3 to 8, 1.70c.; Nos. 9 and 10, 1.75c.; Nos. 11 and 12, 1.80c.; Nos. 13 and 14, 1.85c., and Nos. 14 and 15, 1.95c.; one-pass box annealed No. 28 black sheets, 2.40c., and No. 28 galvanized, 3.50c., at mill. We quote corrugated roofing sheets at $1.70 per square for painted and $3 for galvanized, 2½-in. corrugations. Jobbers charge the usual advances over these prices for small lots from store.

Bars.—New orders for iron and steel bars this month have been lighter than for some time, but specifications against contracts are coming into the mills at an unprecedented rate, some of these contracts having been taken in the summer months, when prices were lower than they are now. All tonnage unspecified in such contracts that expire December 31 will no doubt be canceled. The new demand for iron bars is only fair, but the mills are pretty comfortably filled with orders for the next two or three months. On contracts from regular customers the mills are entering orders for steel bars at about 1.45c., at mill, for delivery in first and second quarters of next year. We quote iron bars at 1.70c. to 1.75c., Pittsburgh, for reasonably prompt shipment.

Hoops and Bands.—New orders are light, the mills running mostly on specifications against contracts which are coming in freely. We quote steel hoops for forward delivery at 1.50c. to 1.55c., and for prompt shipment at 1.60c. to 1.65c., at mill. Steel bands are firm at 1.45c. to 1.50c., on contracts for forward delivery, and 1.55c. to 1.60c. for reasonably prompt shipment.

Spelter.—There has been a decided reaction in prices of spelter, prime grades being freely offered at 6.15c., East St.

Louis, while a firm offer might shade this price. We quote the market at 6.15c., East St. Louis, with a freight rate of 12½c. to the Pittsburgh District.

Spikes.—No large orders have lately been placed by railroads, but the makers of spikes are pretty well filled up through the first quarter of next year. We quote standard sizes of railroad spikes, 4½ x 9-16 in. and larger, at $1.80 to $1.85 for first quarter. Boat spikes are firm, at $1.80, base, and small railroad spikes at $1.80, base. These prices are for carload and larger lots, 10c. per keg advance being charged for small lots.

Shafting.—Buyers are specifying liberally against contracts for shafting placed some time ago when prices were lower, but new orders are only fair. It is stated that discounts on shafting are being firmly held on the basis of 55 per cent. off in carload and larger lots, and 50 per cent. off in less than carload lots, delivered in base territory.

Rivets.—The new demand for rivets is fair, but most consumers placed contracts some time ago when prices were lower than they are now, and are specifying liberally against these orders. We quote: Structural rivets, ¾ in. and larger, 2.15c., base; cone head boiler rivets, ¾ in. and larger, 2.25c., base; ⅝ in. and 11-16 in. take an advance of 15c., and ½ in. and 9-16 in. take an advance of 50c.; in lengths shorter than 1 in. also take an advance of 50c. Terms are 30 days, net cash, f.o.b. mill. The above prices are absolutely minimum on contracts for large lots, makers charging the usual advances of $2 to $3 a ton to the small trade.

Merchant Pipe.—The leading pipe mills have sent out the new card of Pittsburgh basing discounts, referred to in this report last week, and which go into effect January 1. It is stated that the change in the pipe list was made to fit present conditions, and to correct some errors which developed in the old list. Heretofore public quotations have been based upon catch weights, known as "merchant weights." Hereafter such quotations will be based upon "card weights," hence the change in the card, which, however, carries the same differentials to jobbers as formerly pertained to "merchant weight." Merchant weight pipe will still be furnished in black and galvanized, ⅛ to 6 in. only when specified, and will be sold to jobbers at the usual concession on "card weight" prices. The result leaves the net price of pipe about the same as heretofore. This new table of discounts will be found elsewhere in this issue.

Boiler Tubes.—There is more liberal buying in boiler tubes by the railroads, and some fairly large orders are being placed. It is also stated that the demand for merchant tubes is heavier.

Iron and Steel Scrap.—The scrap market is almost at a standstill as regards new buying, but a more active movement is expected after the first of the year. Prices on borings and turnings seem to be weaker than on any other grades of scrap. Dealers quote about as follows: Heavy steel scrap for delivery at leading consuming points, such as Monessen, Steubenville, Sharon, Follansbee, Brackenridge and Pittsburgh, $18 to $18.25, delivered. No. 1 cast scrap is held at about $16.50 and No. 2 at about $15.50; low phosphorus melting stock, $21 to $21.25; bundled sheet scrap, $16.25 to $16.50; rerolling rails, $18.50 to $18.75, for delivery at Cumberland, Md., Cambridge or Newark, Ohio; railroad malleable, $16 to $16.25; No. 1 busheling, $15.50; No. 2, $12.50; grate bars, $14 to $14.25; locomotive axles, $28 to $28.25; iron axles, $27.25 to $27.50; steel axles, $21.50 to $21.75; No. 1 railroad wrought scrap, $19 to $19.50; old car wheels, $18 to $18.25; cast iron borings, $10.50 to $10.75; machine shop turnings, $12.50 to $12.75; sheet bar crop ends, $18.75 to $19. All the above prices are per gross ton, f.o.b. Pittsburgh.

Coke.—Prices on coke seem to be somewhat weaker, probably due to the fact that the output is breaking all records, while consumers of both furnace and foundry coke are pretty well covered for the first half of the year. Standard grades of furnace coke for prompt shipment can be had at $2.60 to $2.65 per net ton, at oven, while on contracts for first half of the year from $2.65 to $2.75 is quoted. The output of coke in the Upper and Lower Connellsville regions last week was 452,735 tons. This is the greatest quantity of coke ever made in these two regions in any one week.

Wire Products.—The new demand for both wire and cut nails and also for wire products is quiet, as it always is at this season. However, most consumers have contracts in with the mills, placed some time ago, when prices were lower than they are now, and specifications against these contracts are coming in very freely. We quote wire nails at $1.85 in carload and larger lots; painted barb wire, $1.85; galvanized, $2.15; annealed fence wire, $1.65; galvanized, $1.95, and cut nails, $1.85, all f.o.b. cars, Pittsburgh, usual terms, with full freight to destination added.

The United States Civil Service Commission announces an examination on January 26, 27 and 28 to secure eligibles for filling a vacancy in the position of senior mechanical and optical draftsman at the Frankford Arsenal, Philadelphia, Pa. Information regarding the examination may be obtained upon application to the United States Civil Service Commission, Washington, D. C.

Metal Market.

NEW YORK, December 29, 1909.

THE WEEK'S PRICES.

Cents per Pound.

	Copper.			Lead.		Spelter.	
Dec.	Lake.	Electrolytic.	Tin.	New York.	St. Louis.	New York.	St. Louis.
23	13.75	13 50	33.60	4.70	4.67½	6.30	6.15
24	13.87½	13.62½	33.75	4.70	4.67½	6.30	6.15
27	13.87½	13.62½	33.85	4.70	4.65	6.30	6.15
28	14.00	13.62½	33.95	4.70	4.65	6.30	6.15
29	14.00	13.62½	33.95	4.70	4.65	6.30	6.15

Interest in the metal trade this week was centered on copper, which has advanced and is selling better. Tin is still hovering close to 34c. Lead is slightly weaker in St. Louis and spelter has softened somewhat. Antimony promises to go higher and foreign tin plates have advanced.

Copper.—Copper prices are advancing. The market is firm and has a strong undertone. There has been some fairly good buying during the week, particularly for export. The United Metals Selling Company sold some electrolytic Monday and Tuesday at 13.62½c., but yesterday its price was advanced to 13.75c. A number of good sales of electrolytic at 13.62½c. were recorded, and it is thought that within the next few days the price will be further advanced. Lake copper is fairly strong at 14c. Some outside lots might be picked up at a little under that figure, but 14c. seems to be the general market. The wire trade is admittedly dull just now, but there are indications that it will shortly pick up. If the wire interests come into the market for any amount of copper, still higher prices will go into effect, and there are some who believe that the trade will see a 15c. market shortly. The exports have increased and so far this month 24,424 tons have been sent abroad. Considerable of the copper sent last week was purchased during the buying movement early in September. Much of this copper is being sent away in cathodes, which is taken as an indication that it will not go into immediate consumption. In London to-day spot copper was sold for £61 5s. and futures for £62 7s. 6d. The sales were large and amounted to 1200 tons of spot and 1800 tons of futures.

Pig Tin.—The existing high prices of pig tin are hardly warranted by the demand, which is light. Consumers are aware that speculative interests in London are manipulating the market for higher prices, and they are holding off as long as they can. Tin is not very plentiful here, however, and unless those who are holding the metal in London let loose of some of it for shipment to this country tin will remain high. The market went off somewhat last Thursday and Friday and some buyers placed orders. Yesterday, however, prices were again advanced and transactions were made at 33.95c., the highest price reached so far this year. In London to-day spot tin was sold for £154 and futures for £155 10s. The sales amounted to 200 tons of spot and 700 tons of futures.

Tin Plates.—Because of the heavy demand for foreign tin plates, the market abroad has gone up, and in London to-day the price for plates at Swansea was 12s. 7½d., which is a penny and a half higher than the price of last week. Conditions here are unchanged. There is still a shortage. The leading interest is quoting $3.84 for 100-lb. IC coke plates, but premiums are being asked by the independent mills.

Lead.—Lead continues strong, although there is not a great amount of buying. The American Smelting & Refining Company is still asking 4.70c. and outside interests are asking and getting in some cases as much as 4.75c. The market is a little softer in St. Louis, but the independent sellers are still in control of the situation there. Last week some of them were getting the same price as prevailed in the New York market, but now lead can be bought there for 4.65c. This is still too high to permit the shipment of lead from the West at a profit.

Spelter.—Spelter is more quiet and there are reports of some shading under the regularly quoted price of 6.30c. The St. Louis market is not strong and the price there is 6.15c. There is but little demand both here and in St. Louis.

Antimony.—Antimony for delivery in February and March is high, and it is evident that there is to be an advance in prices. Hallett's can be now obtained at 8.25c. and Cookson at 8.50c. Outside brands are 8c. and prices are being firmly held.

Old Metals.—The market is strong. Following are dealers' selling prices:

	Cents.
Copper, heavy cut and crucible	13.00 to 13.25
Copper, heavy and wire	12.50 to 12.75
Copper, light and bottoms	11.75 to 12.00
Brass, heavy	9.25 to 9.50
Brass, light	7.75 to 8.00
Heavy machine composition	12.25 to 12.50
Clean brass turnings	8.75 to 9.00
Composition turnings	10.25 to 10.50
Lead, heavy	4.20 to 4.25
Lead, tea	3.90 to 3.95
Zinc scrap	5.00 to 5.25

New York.

NEW YORK, December 29, 1909.

Pig Iron.—A considerable sale of malleable pig iron for Eastern delivery is the chief transaction of the week. Inquiries are more numerous, however, and several important users of foundry iron are feeling the market. In one case iron for delivery in any part of 1910 will be taken; in another iron is wanted for the second quarter, and in still another the second quarter and a portion of the third is the period to be covered. Some of the firms in the market are admittedly hunting bargains. Very little is being done in spot iron, and furnaces are not pressing iron for forward delivery. The buying of low phosphorus iron by a crucible steel interest for shipment to the Central West has taken up 6000 or 7000 tons in all, a part of it coming from the East and a part from Tennessee. We quote the New York market for foundry iron as follows: No. 1, $19 to $19.25; No. 2, $18.50 to $18.75; No. 2 plain, $18.25 to $18.50.

Steel Rails.—A government inquiry is up for several thousand tons for Panama and the Central of New Jersey and the Baltimore & Ohio are in the market, the latter for a large tonnage. Eastern mills look for an improvement in demand from their natural territory after the first of the year.

In the Wheeling district Riverside furnace No. 1 of the National Tube Company has been blown out for relining, which will require about 30 days.

Finished Iron and Steel.—The usual lull that prevails at this time of the year is being experienced in all lines so far as the taking of new business is concerned, but there has been and can be no let up in the activity of the mills. Specifications on contracts expiring with the end of the year are naturally very heavy, and in general deliveries are not improving, although in some lines earlier shipments are being promised. Deliveries of plates are a little better. Many finished orders are delayed in delivery by the recent heavy snowfalls that have so hampered the handling of freight. The closing up of the year's work, taking inventories and preparing for the next year account for the prevailing quiet and have given opportunity to survey the prospects for the future. The feeling seems to be that the next quarter will not only be as good but will probably be even better than the one just closing, which has been the best since 1906. The year 1910 is expected to be a record-breaker. There are no immediate prospects of price changes. Among the larger matters pending now are the municipal building in New York City (18,000 to 25,000 tons) and the one in Springfield, Mass. (1500 tons), and the loft building of Haywood Bros. & Wakefield, New York City (3500 tons). The decision to use reinforced concrete for the Plymouth Building in Minneapolis has removed about 4000 tons from the market. The Pennsylvania Steel Company has taken about 500 tons for bridges for the Chesapeake & Ohio Railroad, and the Minneapolis Steel & Machinery Company about an equal amount for the Minneapolis, St. Paul & Sault Ste. Marie Railroad. The Pennsylvania Steel Company has also obtained a highway bridge over the Passaic River for the Newark plank road requiring 1800 tons, the contract for which has been awarded to Snare & Triest. The total of business taken this month by the American Bridge Company is expected to amount to 50,000 tons, which will bring the year up to about 580,000 tons. Recent awards for construction using Bethlehem shapes are as follows: Crear-Adams warehouse, Chicago, 1000 tons, Brown-Ketchum Iron Works, contractor; Weldon Building, Cleveland, 400 tons, National Iron & Wire Works, contractor; Akron National Bank, Akron, Ohio, 800 tons, Riverside Bridge Company, contractor; Theo. Starrett Building, New York, 600 tons, Hinkle Iron Company, contractor; Automobile Club of America Building, New York, 1500 tons, Milliken Brothers, Inc., contractor; Boston Stock Exchange, Boston, Mass., 300 tons, New England Structural Company, contractor, and a factory for the Brown & Sharpe Mfg. Company, Providence, R. I., 600 tons, Tower Iron Works, contractor. Post & McCord, through the American Bridge Company, will furnish about 180 tons for the Sloane Maternity Hospital, New York City. The Canadian Department of Marine and Fisheries, Ottawa, Canada, is calling for tenders for the supplying of 624 tons of steel plates and shapes required at the government shipyard at Sarel, Quebec. The tenders will be received until noon January 5. There have been no changes in prices. Plain structural material and plates are still quoted at 1.76c.; steel bars, 1.66c.; ordinary refined iron bars, 1.70c. to 1.75c., and test bars, 1.75c. to 1.80c., all in carload lots, New York.

Ferroalloys.—Ferromanganese remains quiet and is in good supply. Most sellers are demanding $45.50, but there are reports of offerings at slightly lower prices. The demand for ferrosilicon is better and some good sales have been made. The market is quoted at about $63.

Cast Iron Pipe.—Little business is now being placed for early delivery, but a sharp demand is experienced for spring shipments. Contracting is especially heavy with New England buyers. The City of New York will open bids December 31 for 5000 tons of waterpipe. The prospects are excellent for continued good business. Prices have not advanced, the reports in the daily papers being incorrect. Recent contracts placed by the City of New York have been covered at about $24, Carload lots of 6 in. are quoted at $25.50 to $26 per net ton, tidewater.

Old Material.—While current business is light, the market is somewhat more settled as dealers are now getting their bearings, having a better comprehension of the conditions in eastern Pennsylvania, while the strength of the old material market in Pittsburgh is having its effect on values here. The heavy fall of snow, practically covering the northern half of the country, is also making holders of scrap feel encouraged to look for a somewhat diminished supply for a considerable time to come, with possibly some effects on prices. The foundry trade leads in the demand for scrap. All kinds of foundry stock, except car wheels, are quite firm and in fair demand. As nearly as can be ascertained the following quotations represent the market, per gross ton, New York and vicinity:

Rerolling rails	$16.00 to $16.50
Old girder and T rails for melting	15.00 to 15.50
Heavy melting steel scrap	15.00 to 15.50
Relaying rails	20.50 to 21.00
Standard hammered iron car axles	26.00 to 27.00
Old steel car axles	19.50 to 20.00
No. 1 railroad wrought	17.50 to 18.00
Wrought iron track scrap	15.00 to 15.50
No. 1 yard wrought, long	15.00 to 15.50
No. 1 yard wrought, short	14.50 to 15.00
Light iron	9.00 to 9.50
Cast borings	9.00 to 9.50
Wrought turnings	11.00 to 11.50
Wrought pipe	14.00 to 14.50
Old car wheels	15.50 to 16.00
No. 1 heavy cast, broken up	15.00 to 15.50
Stove plate	13.00 to 13.50
Locomotive grate bars	12.50 to 13.00
Malleable cast	16.50 to 17.00

Iron and Industrial Stocks.

NEW YORK, December 29, 1909.

Another week of well sustained prices has been experienced on the stock exchanges. Fluctuations have not been specially noteworthy. The following is the range of prices on active iron and industrial stocks from Thursday of last week to Tuesday of this week:

Allis-Chalm., com	15	Railway Spr., com.	51⅛- 51⅞
Allis-Chalm., pref.	54¼- 54¾	Railway Spr., pref.	107
Beth. Steel, com.	33½- 34	Republic, com	45⅝- 45½
Beth. Steel, pref.	67½	Republic, pref.	104 -104½
Can, com.	13 - 14	Sloss, com.	86½- 87¼
Can, pref.	80½- 81⅝	Sloss, pref.	116¼-116½
Car & Fdry, com.	71 - 71¾	Pipe, com.	32½
Car & Fdry, pref.	120	Pipe, pref.	83½- 84⅛
Steel Foundries	64½- 65	U. S. Steel, com.	90 - 91⅜
Colorado Fuel	49½- 51	U. S. Steel, pref.	125 -125½
General Electric	159½	Westinghouse Elec.	81½- 82¼
Gr. N. ore cert.	80 - 81¼	Va. I., C. & C.	73½
Int. Harv., com.	116 -117⅞	Am. Ship, com.	78¼- 78½
Int. Harv., pref.	127½-128	Chi. Pneu. Tool	38¾- 41⅜
Int. Pump, com.	51 - 53	Cambria Steel	48¾- 49⅜
Int. Pump, pref.	90½	Lake Sup. Corp.	27 - 27¾
Locomotive, com.	59 - 60¼	Penn. Steel, pref.	115
Locomotive, pref.	115 -116	Warwick	11
Nat. En. & St., com.	27½- 28⅜	Crucible St., com.	17¼- 19⅛
Nat. En. & St., pref.	98⅜	Crucible St., pref.	93⅜- 94
Pressed St., com.	50¾- 52	Harb.-W. Ref., com.	35
Pressed St., pref.	105⅛-105½	Harb.-W. Ref., pref.	94⅛

Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 91⅛, preferred 125¼, bonds 105; Car & Foundry common 72, preferred 120; Locomotive common 60, preferred 116; Steel Foundries 65, Colorado Fuel 50½; Pressed Steel Common 51½; preferred, 105½; Railway Spring common, 51¾; Republic common 45½, preferred 104½; Sloss-Sheffield common 87½; Cast Iron Pipe common 32½, preferred 84; Can common 13¾, preferred 82½.

Iron and Steel Bonds.

Chisholm & Chapman, 18 Wall Street, New York, furnish the following quotations:

	Bid.	Asked.
Bethlehem Steel 1st ext. 5s, due January, 1926	88¾	89⅛
Bethlehem Steel purchase money 6s, August, 1998	117	119
Buffalo Iron 5s, October, 1925	95	100
Buffalo & Susquehanna Iron 1st 5s, June, 1932	..	99½
Buffalo & Susquehanna Iron deb. 5s, January, 1926	94	97¾
Dominion Iron & Steel 5s, July, 1929	..	98½
La Belle Iron 1st 6s, December, 1923	103½	104¼
Lackawanna Steel 1st 5s, April, 1923	100	100⅛
Maryland Steel 1st 5s, February, 1922	101	..
Pennsylvania Steel 1st 5s, November, 1917	..	103
Pennsylvania & Maryland Steel 6s, September, 1925	109	110
Republic Iron & Steel 1st 5s, October, 1934	103	..
Sloss Iron & Steel 1st 6s, February, 1920	106	108
Sloss Iron & Steel consol. 4½s, April, 1918	95½	96¼
Jones & Laughlin Steel 1st 5s, May, 1939	101¼	101⅝
United States Steel Corporation.		
Collateral Trust 5s, Series A, C, E, April, 1951	114¾	115¼
Collateral Trust 5s, Series B, D, F, April, 1951	114¾	115¼
Sinking Fund 5s, April, 1963	105	105¼
Union Steel 1st 5s, December, 1952	104¼	105¼
Clairton Steel 5s, 1908-1913	100	..
St. Clair Furnace 1st 5s, 1910-1939	100	..
St. Clair Steel 1st 5s, 1908-1926	100	..
Illinois Steel deb. 5s, January, 1910	100	..
Illinois Steel 5s, April, 1913	100	..

All bonds quoted "and interest."

The syndicate which purchased last summer $8,500,000 5 per cent. first mortgage bonds of the International Steam Pump Company has been dissolved without any call being made upon subscribers. The issue was decidedly successful considering the general bond market situation. It is understood that the great bulk of the bonds has been distributed among investors. For the last three months the company has been earning at the rate of between 7 and 8 per cent. on its $17,762,000 common stock, compared with less than 1 per cent. for the fiscal year ended March 31 last.

Dividends.—The Thompson-Starrett Company has declared the regular semiannual dividend of 4 per cent. on the common stock and an extra dividend of 16 per cent. on the common stock, both payable January 3.

The Union Switch & Signal Company has declared the regular quarterly dividend of 2 per cent. on the common and preferred stocks, payable January 10.

The Vulcan Detinning Company has declared a quarterly dividend of 1¼ per cent. on the preferred stock and in addition thereto one of ½ per cent. on account of accumulated unpaid dividends, both dividends payable January 20.

The E. W. Bliss Company has declared a quarterly dividend of 2½ per cent. on the common stock and 2 per cent. on the preferred stock, payable January 3.

The Savage Arms Company, Utica, N. Y., has declared an initial dividend of 1½ per cent. quarterly on its common stock, thus placing this stock on a 6 per cent. basis.

The Youngstown Sheet & Tube Company, Youngstown, Ohio, has declared a quarterly dividend of 2 per cent.

The Steel Corporation's Large Outlay in the Birmingham District.

Chairman E. H. Gary of the United States Steel Corporation, who recently returned from a trip to Birmingham, Ala., was quoted this week in New York daily newspapers as follows:

We have spent approximately $6,500,000 for construction work in the Birmingham district since we acquired the Tennessee Coal & Iron Company. We have also appropriated, but have not yet expended, an additional $7,000,000. We find that from the Birmingham district we can reach on equal terms of freight rates 30 per cent. of the population of the United States. The Steel Corporation can manufacture in Alabama, when its construction work now under way and contemplated is completed, steel and iron at as low a cost as any place in the world. This gives one an idea of the advantages the South offers in steel manufacture.

The work already accomplished at our Southern plants is of the best, and I was very well satisfied with the condition and general layout of the improvements and the plans for additional construction work. We have a large supply of iron ore, coal and limestone, and with the completion of our water system we will have an abundant supply of good water. Our organization at the Tennessee Coal & Iron plants is as good as can be found anywhere. The loyalty of the officers and men to the corporation is ideal.

The Birmingham district is an ideal center for reaching domestic as well as foreign sources of outlet for steel production. The district will eventually become one of the Steel Corporation's great shipping centers for steel and iron sold in foreign countries.

The Cambria Steel Company to Enter the Wire Trade.

The Cambria Steel Company, Johnstown, Pa., expects shortly to begin the erection of a wire rod mill and wire drawing plant, having decided to add wire products to its lines of manufacture. The capacity of the wire department will be 300 tons a day. It is understood that contracts for the new buildings and equipment have already been let.

The Rock Island Railroad will establish a pension system January 1. The allowance will be 1 per cent. of the average regular monthly pay received for the 10 years next preceding retirement for each year of service. Thus, if an employee has been in the service for 40 years and his average salary for the last 10 years of the period was $75 a month, his pension allowance will be 40 per cent. of $75, or $30 a month. All officers and employees who have reached the age of 75 years must retire, and the employees in the operating service may be retired at the age of 65 years. Hereafter no inexperienced person over 35 years of age and no experienced person over 45 years of age will be taken into the service of the company.

Labor Notes.

The Stove Founders' National Defense Association recently held its annual conference with the representatives of the International Iron Molders' Union, and reached a satisfactory arrangement for molders' wages in stove foundries for the coming year. No change was made in the wage rate.

Following is the text of a card put in the pay envelopes this week of the men employed by the Iron League Erectors' Association, New York City:

On February 1, 1910, the rate of wages for competent, all round bridgemen and structural iron workers in New York City paid by members of this association will be raised to 60c. an hour, and on July 1, 1910, to $5.00 a day.

Although no demand upon us has been made from any source, we believe that trade conditions and future prospects justify such increases. The open shop, which we are more than ever determined to maintain, has brought about healthier and better conditions in our industry and in the relations between employer and employee, and it is these which have enabled us to take this action at this time.

We ask the continued confidence and co-operation of our men in the future, as in the past. These things mean greater results from the joint efforts of the employer and his men, and make possible better returns for both.

The above action is wholly voluntary, as no intimation of a demand was received from any source. The seven local members of the National Erectors' Association in New York City are also members of the above organization and comprise all of its largest members. A separate announcement by the national body is therefore hardly necessary, but some such formality may be observed. The wages of these workmen will be higher July 1 than the rate for which the men in this trade struck two years ago.

The Youngstown Foundry & Machine Company, Youngstown, Ohio, which has been making extensive improvements at its East Boardman street plant, has installed one 15-ton and one 25-ton air furnace and a yard crane runway with 10-ton traveling crane. The company is also installing a number of roll lathes, and expects to start up about January 1. This plant is to be known hereafter as the "roll department," and the output will be chilled and sand rolls and high grade air furnace castings. At the iron department on Ardale street, cupola and air furnace castings will be made. The office, machine, blacksmith and pattern shops are located at the iron department. The open hearth furnace, formerly operated by the company, has been dismantled, and the entire steel casting equipment disposed of.

At a recent meeting of the directors of the Youngstown Sheet & Tube Company, Youngstown, Ohio, it was decided that after January 1 the company will carry its own liability insurance, providing for the payment of agreed amounts to employees meeting with accident, or for the death of employee while in the performance of duties. The adoption of the plan was at the suggestion of President James A. Campbell, who says that it is to be experimental for the year 1910, and is not intended to be money saving in its object.

The American Steel & Wire Company has shipped a solid train load of its products to the Pacific Coast, via the Alton, Missouri Pacific, Denver & Rio Grande and Western Pacific railroads. This movement is notable, not only for being the first through train to run over the Western Pacific, which was opened up for business December 11, but also for the fact that it is the first full train of wire and nails that has ever moved to the Pacific Coast.

Legal Decisions of Interest to Manufacturers.

Sales—Rights of Parties.—Under a purchase of machinery by an agent for another, the agent, in an action against him and the principal for the price, cannot interpose a set-off peculiar to himself. The seller would be liable for all damages caused by delay in shipment which were reasonably within the contemplation of the parties unless his liability was restricted by contract. A contract for the sale of machinery called for delivery within three weeks, and provided that the seller assumed no liability for damages on account of delay, and that the contract was contingent upon strikes, accidents or other delays beyond the seller's reasonable control. Held, that in the absence of fraud or bad faith of the seller, it was not liable for a delay of 63 days in making shipment, though the delay might be so protracted and under such circumstances as to make him liable even under the contract. (North Carolina Supreme Court, Lambert Hoisting Engine Company *vs.* Paschall, 65 Southeastern Reporter 523.)

Sales—Passing of Title.—Defendant ordered plaintiff to "ship to" defendant at a specified place and over a specified route 50 cars of coal of a certain grade and price f.o.b. mines, to be shipped during the first week in April, 1906. Held, that the words "shipped to" did not indicate an intention that defendant should control the coal in transit; and hence the fact that plaintiffs shipped the coal in their own name did not necessarily as a matter of law disclose an intent to retain title after delivery of the coal to the carrier. The time of passing title to personal property sold depends on the intention of the parties. The ordinary effect of a purchase of coal at a specified price "f.o.b. mines" is that title shall pass on delivery of the coal to the carrier. Where no rights of creditors had intervened, and there was no question of the seller's ability to pay for coal purchased and refused, it was the seller's right to rebut the presumption of intent to retain title by consigning the coal to the place of delivery in the name of the seller, instead of the buyer. (United States Circuit Court of Appeals, Sixth Circuit, Hoffman *vs.* Gosline, 172 Federal Reporter 113.)

Patents—Time for Filing.—In computing time under the United States statutes which permit the filing of an application for a patent in this country within 12 months after the filing of an application for a patent for the same invention in a foreign country, the day of the application in the foreign country is excluded, and where the foreign application was filed on February 23, an application filed in this country on February 23 of the following year was in time. (United States Circuit Court, Eastern District, Pennsylvania, Hess-Bright Mfg. Company *vs.* Standard Roller Bearing Company, 171 Federal Reporter 114.)

Trade Names—Right to Enjoin Imitation.—To entitle a manufacturer to an injunction to prevent a competitor from imitating a name used by him to designate his goods which is descriptive, and therefore not a valid trademark, the imitation must be with fraudulent intent or such as is calculated to deceive the public. (United States Circuit Court, Southern District, New York, Florence Mfg. Company *vs.* Dowd, 171 Federal Reporter 122.)

Warranties on Sales—Rights of Parties.—A contract of sale of machinery contained a warranty and a separate and distinct clause providing that notice of defects should be given to the seller within 10 days after the machinery was received, or the same should be deemed waived; the seller reserving the right to furnish all material and labor to correct the defects. Held, that the notice was not a condition precedent to a recovery for breach of the warranty. A buyer may rely on an express warranty, except as to defects obvious on casual inspection, and is not bound to make any examination. A stipulation in a contract of sale of machinery, with warranty, that if anything was "found" defective, notice thereof should be given to the seller within 10 days after the machinery was received, the seller reserving the right to correct the same and to furnish the material and labor to obviate the defect, did not require the buyer to inspect the machinery with a view to giving the notice. (Alabama Supreme Court, W. T. Adams Machine Company *vs.* Turner, 50 Southern Reporter 308.)

Injuries to Employees—Suits for Damages.—The duty of an employer to maintain appliances in good repair may be delegated to an employee, and the employer is not liable to a fellow employee for negligence on the part of the workman to whom such duty is confided, though he is liable for negligence in selecting such workman and in an action for injuries to an employee evidence that another employee charged with the duty of repairing the appliance was negligent did not sustain an allegation that the employer was negligent in that respect. In an action for injuries to an employee through defective ladles used for carrying molten iron, an allegation that it was defendant's duty to furnish plaintiff safe ladles and to keep them in repair, and that defendant negligently failed so to do, alleged two or more acts of negligence, so as to place on plaintiff the burden of showing that the injury resulted from all of the negligent acts or omissions operating together. (Alabama Supreme Court, Central Foundry Company *vs.* Bailey, 50 Southern Reporter 346.)

Bankruptcy—Property Held by Bankrupt in Trust.—Petitioner, a manufacturer of farm machinery, shipped machines by the carload to the bankrupt, which was a hardware company, under a contract by which the bankrupt received and stored them and from time to time shipped machines out on orders from petitioner. The machines were not charged to the bankrupt, nor invoiced as part of its stock, but it was paid an agreed price for storage and transfer. It had the privilege of selling any of the same to its own customers, and machines, when so sold, were charged to it. At the end of the year an inventory was taken by petitioner of the machinery then on hand in storage. Held, that the title to the property remained in petitioner, and that on the bankruptcy it was entitled to reclaim possession of the machines on hand from the bankrupt's trustee. (United States Circuit Court of Appeals, Fourth Circuit, Walter A. Wood Mowing & Reaping Machine Company *vs.* Vanstory, 171 Federal Reporter 375.)

Injury to Employees—Defective Tools.—A mere imperfection in a tool furnished by an employer for the use of his workmen, by reason of which bodily injury results to an employee, does not necessarily import actionable negligence on the part of the employer, the extent of whose obligation is to exercise reasonable care to provide reasonably safe tools. Plaintiff, employed by defendant as an iron worker, while holding a chisel which was being struck by another employee with a sledge, was struck in the eye and injured by a fragment which broke from the face of the sledge. The sledge was purchased from a manufacturer of high standing and was not known to be defective, nor did it appear that there was any defect therein which could have been discovered by a reasonable inspection. Held, that such facts did not establish any negligence on the part of defendant which rendered it liable for the injury, which must be regarded as the result of an accident without culpable negligence on the part of any one. Circuit Court of Appeals, Third Circuit, O'Hara *vs.* Brown Hoisting Machine Company, 171 Federal Reporter 394.)

Infringement of Trademarks.—One engaging in business as a jobber, buying his goods from one manufacturing them solely for him, according to his directions as to design, material, workmanship, &c., may create a valid trademark on the goods. Since the Massachusetts statutes authorize the recovery of profits realized through the wrongful use of a trademark, the fact that there is no evidence that the owner of a trademark sustained damages because of another's wrongful use thereof does not necessarily make it inequitable to hold the wrongdoer liable for the profits realized through his use of the trade name. The fact that one using the trademark of another after his right under a license so to do had expired had agreed to pay during the life of the license a specified sum annually for the use of the trademark is some evidence of the damages sustained by the owner of the trademark because of such wrongful use. (Massachusetts Supreme Judicial Court, Nelson *vs.* J. H. Winchell & Co., 89 Northeastern Reporter 180.)

Payment of Notes.—A person ultimately liable on a note is not released by failure to present the note or demand payment at any particular time or place. Where a note does not express a place of payment, it is generally payable at the maker's place of residence or usual place of business. Where a note payable on or before a given date, with the option to the holder to declare the principal and interest due on default as to monthly installments of interest, did not fix the place for payment, and the maker maintained a place of business in the city where the note was given, and was able and willing to make the interest payments as they matured, the holder could not declare the note due for the maker's failure to pay matured installments of interest, without presentment, demand and refusal at the maker's place of business. (Washington Supreme Court, Bardsley *vs.* Washington Mill Company, 103 Pacific Reporter 822.)

Patents—Evidence of Invention.—The fact that a patented device overcame defects in prior structures which persons skilled in the art had for several years been trying unsuccessfully to remedy, and went into immediate and successful commercial use, is persuasive evidence of invention subject to protection. (United States Circuit Court of Appeals, Sixth Circuit, Electric Controller & Supply Company *vs.* Westinghouse Electric & Mfg. Company, 171 Federal Reporter 83.)

Patents—Scope of Claims.—A patentee is entitled to the benefit accruing from a characteristic of his device which is clearly disclosed, although not specifically claimed. (United States Circuit Court, Southern District, New York, E. H. Angle Regulating Appliance Company *vs.* Alderer, 171 Federal Reporter 93.)

Patents—Check Valves.—The Schutte patent No. 524,048, for a check valve, having a supplementary mechanism on the delivery side to cause the valve to close slowly and prevent hammering, was not anticipated, and discloses invention. Also held infringed. (United States Circuit Court of Appeals, First Circuit, Holcomb *vs.* Schutte & Koerting Company, 171 Federal Reporter 844.)

The Machinery Trade.

NEW YORK, December 29, 1909.

While business during the week was not as good as it was earlier in the month, this was no more than expected in view of the existing holdiay season. The largest part of the business during December with New York machinery houses was in pick up orders, and many of them were placed by out of town people who visited the trade here. Visitors were scarce the past week and but few new inquiries came in. It is apparent that machinery buyers are waiting until the new year sets in before completing their wants. A surprising feature of the trade conditions is the absence of inquiries from the railroads. The Pennsylvania Railroad is doing some purchasing, but this is the only large road that is doing anything of any account in a buying way just now. The large steel plants of the East have been making some purchases and at least one machinery house has inquiries aggregating $100,000 worth of equipment from several steel making companies. These inquiries are for heavy equipment in the line of conveying machinery, but it is understood that several Pennsylvania steel making companies are making extensive additions to their furnace equipment. For a December month the present one will prove a banner month and with the exception of December of 1906 many houses have already done more business than they ever did before at this time of the year.

The demand for small engines and boilers is showing improvement and some good orders have been reported in this territory of late. Most of the business taken was for engines and boilers to replace machinery now in use which has become worn out in the rush work of the last year. Deliveries are not particularly good and many engine purchasers who hoped to put new machines into commission during the holiday lull have been disappointed.

There is considerable complaint in the trade over traffic delays which is not all due to the recent storm. There are freight hold ups in every direction, a large part of which is because of lack of freight cars, according to statements made by the railroads. It is evident that if business continues good the car building companies will have to make extensions and some of them already have plans in this direction.

The Southern Supply & Machinery Dealers' Association has changed the arrangement for its annual convention which was to be held at Atlantic Beach, Fla., on April 6, 7 and 8, and it is now planned to hold the meetings in Jacksonville on those dates.

The Chamber of Commerce of Coffeyville, Kan., has made an agreement with the United Steel & Iron Company through which the company will assume ownership of 40 acres of land and will build a steel plant costing $500,000, of which the Coffeyville Chamber of Commerce will furnish $60,000. It is understood that work on the plant will be begun as soon as possible and the company has purchased all the machinery of the New Louisville Bolt & Iron Company, of Louisville, Ky., which will be removed to Coffeyville. Plans are being prepared for the plant and bids will shortly be advertised for the erection of the buildings. It is stated that some additions to the equipment purchased by the company will be required, but the list has not as yet been made up. The company has established an office in Coffeyville and can be addressed there. George H. Holzbog, Jeffersonville, Ind., has been made president of the company, but the details regarding the erection and equipment of the plant will be in the hands of William A. Cox and D. A. Snyder, who will locate in Coffeyville. The latter will be general superintendent of the plant when it is in operation.

The Board of Erie County Supervisors of Buffalo, N. Y., is having specifications prepared for a new boiler house for the Buffalo Penitentiary with three 150 hp. boilers and an additional 75 hp. engine. The cost of the plant is estimated at from $35,000 to $40,000. Geo. C. Diehl, 575 Ellicott square, Buffalo, N. Y., is county engineer.

The Rochester & Pittsburgh Coal & Iron Company has started work on an immense coal handling plant to be built at Lucerne, Pa., on the Buffalo, Rochester & Pittsburgh Railroad to care for the product of the company's mines at that point. The plant will be the largest of its kind along that system and as complete and up to date as engineering ability can make it. The plant will have capacity for handling 5000 tons of coal a day. Additional main line and branch tracks have been completed and ground has been broken for the power plant and tipple. It will require about 18 months to complete the work.

The King Sewing Machine Company, Buffalo, N. Y., has leased eight acres of land on Railroad street, Buffalo, for a long term of years. The property abuts on the Delaware, Lackawanna & Western Railroad and a large manufacturing plant will be constructed there. The plant will cost about $150,000 and will have a floor space of 200,000 square ft. There will be a main building 300 x 300 ft., one story in hight with a saw tooth roof; a foundry, 150 x 300 ft. and a warehouse and office building, 80 x 200 ft. All the buildings will be of fireproof construction. W. Grant King is the vice-president and general manager of the company and can be addressed at 254 Court street, Buffalo.

A number of New York machinery houses got some good sized orders from the General Electric Company yesterday and some of the business placed came as a pleasing surprise. The company bought more equipment than was specified in the inquiries sent out and many dealers got duplicate orders for machines on which they bid.

The Pennsylvania Railroad has been inquiring for equipment to be installed in its plant at Altoona. A large part of this plant was idle during the recent panic, but now it is in commission and machinery which is being bought is to replace old equipment and to add to the general efficiency of the plant.

The city of Plattsburgh, N. Y., is arranging to build a large hydro-electric plant, specifications for which have not as yet been prepared. The plant is to be built in connection with a new 200-ft. impounding dam.

The Crown Cork & Seal Company, 1501 Guilford avenue, Baltimore, Md., will erect a 40 x 70 ft. addition to its present foundry.

The Aeromobile Company of America, with offices at 26 Warren street, New York, has been incorporated with $1,000,000 capital stock. It has been definitely decided to manufacture the Luisel aeroplane recently described in *The Iron Age*. No machinery list has been made out as yet.

Philadelphia Machinery Market.

PHILADELPHIA, PA., December 28, 1909.

The holidays, together with the blizzard, which struck this city last week, has completely tied up business. Transactions during the past few days, therefore, have been small and unimportant. Several good size propositions are under consideration, but the usual inventory season has deferred the placing of orders to a considerable extent. The aggregate business taken during December, however, has been better than was generally anticipated. Orders were not individually large, as a rule, but there was a good steady buying movement, confined mostly to single and small lots of tools for replacement or minor extension. The most important business closed last week was the purchase of some $10,000 worth of tools by the Bergdoll Automobile Company of this city. This represents but a small proportion of the purchases originally intended, and we understand that additional requirements will be bought from time to time. Further automobile business is anticipated early in the year, several propositions which have, however, not fully developed as yet, being under consideration. Both merchants and manufacturers entertain most optimistic views regarding business conditions during 1910. The continued activity of iron and steel works, as well as the larger industrial concerns, many of which already have sufficient orders on their books to keep them busy well into the coming year, insures continued prosperity, which will ultimately result in increased requirements in the way of machine tools.

The second-hand machinery market has been practically at a standstill, as is usually the case in this branch of the trade at this season of the year. Scattered buying in some lines is reported, but little actual movement is expected until after the turn of the year. The boiler and engine trade, both in the new and second-hand fields, has been without feature; the trade outlook is considered, however, as quite favorable.

The foundry trade is paying more attention to the usual stock taking than to new business at this season. The amount of business transacted by both gray iron and steel casting plants has been small, although a general resumption is expected early in the coming month.

We understand that bids for the construction of the new union passenger station, to replace the present one, at Baltimore, Md., for the Pennsylvania Railroad, will be ready for estimate early in March.

Plans are posted on a number of contracting builders' boards, in this city, for the new machine shop to be built for the Bethlehem Steel Company, South Bethlehem, Pa.

It is reported that the Standard Steel Car Company, which sometime ago purchased the Middletown Car Works, Middletown, Pa., contemplates extended operations to that plant, particulars regarding which are not available at this time.

Frances Brothers & Jellett, Inc., engineers, have removed from Broad and Wallace streets to 315 North Fifteenth street, where they have larger and more convenient quarters. The new plant is two stories in hight, has a frontage of 90 ft. on Fifteenth street, and a depth of 160 ft. on Wood and Pearl streets.

An application for a charter for a corporation to be known as the Reading Transit Company of Reading, Pa., will be made early in January, the charter and object of which are the construction and operation of motors and

cables, electrical appliances and other machinery for supplying power to passenger railways and the necessary apparatus for applying the same, particularly in the counties of Berks, Lebanon, Montgomery and Philadelphia, Pa. S. P. Light, Reading, Pa., is solicitor for the proposed corporation.

Samuel G. Dixon, commissioner of health, Harrisburg, Pa., will receive bids until January 8, 1910, for furnishing labor and material necessary for the construction of a number of buildings, toilet houses and alterations to existing buildings at the Pennsylvania State South Mountain Sanatorium, near Mont Alto, Pa. Plans may be obtained at the office of the commissioner in Harrisburg, or at Nineteenth and Race streets, Philadelphia, on payment of a nominal sum to insure their safe return.

The Carlston Motor Vehicle Company has purchased a portion of the plant of the Wolff Process Leather Company, on the Frankford Branch of the Philadelphia & Reading Railroad, in this city. The plant comprises numerous buildings as well as considerable land. After necessary alterations it is the purpose of the Carlston Company to occupy the same for the manufacture of electric automobile trucks.

Cleveland Machinery Market.

CLEVELAND, OHIO, December 28, 1909.

Local machinery houses have had a fair volume of trade during the week, business being fully up to the normal for the holiday season. Sales, however, have nearly all been single tools. Business is expected to be mostly of this character until after the beginning of the new year. Dealers during the past two or three weeks have submitted prices on a good number of fair sized inquiries, many of the prospective purchasers stating that they would not place their orders until January. With this business in sight the machinery houses look for quite an active market not later than the middle of January. The demand for second-hand tools, which has been quiet for some time, shows some improvement. Dealers complain that good second-hand tools are very scarce.

Machine tool builders are feeling the effect of the holiday season, orders and inquiries being less plentiful, but nearly all of those in the local field are comfortably filled with work and they regard the outlook for the coming year as very optimistic. A large amount of new construction work in various industries, particularly in metal working lines, is under consideration, and many of these projects are expected to be definitely started soon after the first of the year. Not much business has come from the railroads during the past few months, but a more active demand is expected from this source after the first of the year.

The C. O. Bartlett & Snow Company, Cleveland, is planning to engage in the manufacture of machinery for the reduction of garbage on a much more extensive scale than it has in the past. W. J. Springborn, who retires as Director of Public Service of Cleveland, January 1, will take charge of that department. The company has purchased a building site adjoining its plant and will erect an addition in the spring.

The Davis Mfg. Company, Akron, Ohio, which was burned out last spring, has been reorganized and is installing machinery in a new plant at Beach and Canal streets for the manufacture of a gas heating flatiron. The company is incorporated for $10,000 and has the following officers: A. H. Davis, president; J. H. Rauser, vice-president; O. T. Lane, secretary, and C. W. Wickline, treasurer and general manager.

The Youngstown Armature & Construction Company, Youngstown, Ohio, has been organized with a capital of $10,000, to manufacture and repair armature and field coils, design and install power house and industrial plant equipment and to engage in general engineering and construction work. The officers are B. T. Mottinger, president and general manager; R. F. Elliott, vice-president; P. F. Thayer, secretary and treasurer. The company is fitting up a plant and expects to be ready for business soon after the first of the year.

The Kelly Reamer Company, Cleveland, which was recently formed with a capital of $25,000, to take over the business of the Kelly Tool Company, has effected the following organization: William E. Kelly, president and general manager; Albert H. Weed, vice-president; John M. Marty, secretary and treasurer. The company will manufacture the Kelly adjustable reamer and other tools. An office and factory have been opened at 522 Prospect avenue, N. W.

The Reeves Mfg. Company, Canal Dover, Ohio, has just completed a new addition to its plant, 60 x 200 ft., which will be used for the manufacture of metal tile, which is being added to that company's products. The Reeves company reports that it is crowded with work in all of its departments.

The Belmont Stamping & Enameling Company, New Philadelphia, Ohio, has completed additions to its plant, adding 50,000 sq. ft. to its floor capacity. Two new buildings have been erected, one 80 x 300 ft. and the other 100 x 300 ft. The company reports that its business during the past year has been the largest in its history.

The Cleveland Collet & Machine Company, Cleveland, has increased its capital from $10,000 to $15,000.

The Akron Rubber Mold & Machine Company, Akron, Ohio, has been formed with a capital of $10,000 to manufacture molds for automobile tires. The company has purchased the plant of the Federal Engineering & Machine Company. S. W. Harris will be manager of the company.

Henry A. Robinson, Akron, Ohio, has purchased a 54-acre tract of land in the outskirts of Cleveland where it is announced an expenditure of about $750,000 will be made in the erection of a large plant for the manufacture of sewer pipe and other clay products. Plans are being made by the F.-P. Construction Company of Cleveland.

The Dover Mfg. Company, Canal Dover, Ohio, maker of asbestos sad irons, reports it is running its plant at full capacity, that the past year has been a successful one and the outlook for 1910 is very satisfactory.

The Search Light Gas Company, Warren, Ohio, will enlarge its plant by the erection of a two-story brick building, 40 x 50 ft.

Warren, Ohio, will hold a special election on January 15 to vote on the question of issuing $250,000 in bonds for the purpose of installing a municipal water-works system.

The Goodyear Tire & Rubber Company, Akron, Ohio, announces that it will at once begin the erection of a five-story addition to its plant, 60 x 200 ft.

Milwaukee Machinery Market.

MILWAUKEE, WIS., December 28, 1909.

During the past fortnight trade has been remarkably steady, each day's sales averaging about the same as for the one preceding. Apparatus common to nearly all industries leads the demand, and a number of the larger concerns here agree in stating that purchases of single machines made recently have been intended for a wide diversity of service. Plants coming under the general head of factories, including textile mills, paper mills and the like, seem to be the principal buyers, with steel, iron and cement works, furnaces, smelters, refining plants, &c., second; public utility companies, steam and electric roads, municipalities, &c., third, and machine shops, foundries, &c., fourth. This does not take into account such special lines as the automobile, autotruck and motor boat trade, as orders from manufacturers in the allied industries generally grouped under that heading are rather erratic in character. Machine tool builders have taken some good orders there for new plants or extensions, and sales of motors, controllers, pneumatic appliances, &c., are heavy; but the situation as a whole is difficult to determine with any degree of certainty.

Foreign business continues good, with tendency to largely increase within the next few months. At present it consists chiefly of equipment bought by export companies for use in out of the way parts of the world, particularly mining districts. In the settled industrial centers German competition, and to a less extent English, predominates.

A noteworthy feature of current conditions is the large demand for castings of every description that enter into the manufacture of machinery. Foundry capacity throughout this section is, in most cases, taxed to the utmost. Drafting rooms are behind with their work and deliveries of special apparatus must, of necessity, be retarded by both factors. When all orders now in hand reach the machining stage, local shops will have about all they can take care of with their present equipment. It looks, therefore, as though tool manufacturers have a very lively season ahead, if the needs of Wisconsin machinery builders are to be considered a criterion.

As a harbinger of business expansion, it is also noticeable that every concern visited of late by the writer is preparing new catalogue matter. In many instances this is on an elaborate scale. Several new advertising departments have also been created; and sales campaigns looking a long way ahead, rather than to the present or immediate future, are being planned.

The Reliance Boiler Works, Milwaukee, has decided upon an addition to its plant, which will cost, exclusive of equipment, about $15,000. For details of the latter, address the company.

The Duplex Coil Company, Fond du Lac, Wis., will enlarge its manufacturing facilities to include the production of magnetos.

New power house machinery, including probable installation of a turbine unit, car motors, compressors, air brakes, &c., will be needed about March 1 by the La Crosse Street Railway Company, La Crosse, Wis., to provide for the contemplated extensions of its commercial load and electric railway system.

The Fair Mfg. Company, Racine, Wis., is putting on the

market shaper guards of a new design, the use of which has proved very effective.

C. J. Nelson, Milwaukee, has organized the Nelson Foundry Company. Details as to plant and equipment will be given later.

A foundry will be built in the spring at Janesville, Wis., by interests identified with the Wisconsin Sand & Gravel Company of that place.

The Egan Mfg. Company, La Crosse, Wis., is having plans drawn for an additional building, which will be devoted to the production of implements. It is understood that considerable equipment, including electric motors, will be required.

Extensive improvements, comprising the installation of new woodworking tools and other machinery, will be made to the plant of the Northland Lumber Company, Green Bay, Wis.

Members of the Janesville Granite, Brick & Stone Company, Janesville, Wis., have acquired a site at Oklahoma City, Okla., upon which a large manufacturing plant will be erected.

Some additional pumping machinery is likely to be bought about April 15, or before, at Stoughton, Wis., for municipal service.

The C. F. Megow Company, Milwaukee, has been organized to build motor trucks and will take over the plant of the Champion Motor Car Company, which it succeeds. A new factory will probably be built later on.

The Pierce Automobile Engine Company, Racine, Wis., which contemplated removing to Milwaukee, is reported to have decided upon remaining in its present location.

The Anderson Vehicle Company, Fond du Lac, Wis., will enlarge its plant. The first new building to be erected, which is 90 ft. long, will be used for assembling and storing gasoline engines.

The Pribnow Swage & Tool Works, Mellen, Wis., will be compelled by the pressure of current orders, to extend its manufacturing facilities.

The Wisconsin Bridge & Iron Company has taken the contract for an 1100-ft. steel bridge over the Red River near Durant, Okla., for the Missouri, Oklahoma & Gulf Railroad.

The city of Beaver Dam, Wis., has under consideration the building of a new steel bridge across the Beaver Dam River at that place.

Oconomowoc, Wis., which recently completed an addition to its municipal power plant, will next undertake an extension of the water works system, and some new pumping machinery is likely to be purchased in the spring.

The Optenberg Iron Works, Sheboygan, Wis., which has been taking contracts of late in competition with some of the larger machinery companies in this field, will furnish power house equipment for the new works of the American Mirror Company of that place, including 80-ft. steel stack, boiler, engine, &c.

The Consolidated Water Power & Paper Company, Grand Rapids, Wis., is preparing to add to its power house equipment an hydro-electric unit of about 750 hp., with accessory apparatus. Other machinery, including electric motors, will probably be required in the near future.

It is reliably stated that the contract for a crushing machine, which will have the largest capacity of any gyratory breaker ever built, is to be placed with one of two concerns in this city by the Wagner Stone Company, Sandusky, Ohio, as Milwaukee is the only place in the world where a crusher of the enormous size required can be purchased. Further details in relation to this order can probably be given next week. A similar transaction with the Isthmian Canal authorities is also pending.

The Northwestern Engineering & Construction Company has been incorporated here for $100,000 by W. E. Elliott, H. J. Dunker and Geo. W. Schermuly, and will undertake work of the character indicated in its title.

The Filer & Stowell Company, Milwaukee, is finding a good demand for its Corliss engines at the present time, orders being practically equal to the capacity of the plant, beyond which this concern makes it a strict rule not to go. In the line of saw mill machinery trade is fair.

Among the zinc and lead mines of the southeastern part of this State there is great activity in providing new machinery and other equipment. Almost all of the leading producers, a list of which may readily be obtained, are in the market for apparatus of some kind, and development work on properties which were allowed to lie idle during the period of business depression is now requiring the outfits customary for this purpose. Among the machinery manufacturers supplying this industry, outside of Milwaukee, Janesville and Madison, the Galena Iron Works of Galena, Ill., and Platteville, Wis., are mentioned as doing the bulk of the business.

Geo. Bradish, city engineer of La Crosse, Wis., has recommended, according to reports received here, the installation of a new pumping engine of 6,000,000 gal. capacity in 24 hours, with steam generating plant sufficient for its operation, also two motor driven centrifugal pumps, with an aggregate lift of 10,000,000 gal. daily, in the municipal water works. No bids will, however, be taken until the plan proposed has been formally ratified by the Mayor and Common Council.

The Fred Prescott Steam Pump Company, West Allis, Wis., which has taken a relatively large proportion of orders for machinery to be used in municipal water works throughout the country, is now finding its most profitable activity among the mining districts of the West, where many workings temporarily abandoned need to be dewatered, thus taxing the facilities previously provided and requiring considerable new equipment for pumping.

Steam power equipment, including boilers, engine and auxiliary apparatus will be purchased about January 15 by the La Crosse Rubber Mills Company, La Crosse, Wis.

The Corliss Motor Company, Corliss, Wis., has been incorporated for $1,000,000, to engage in the manufacture of automobiles. A site covering 10 acres was recently purchased, and ground will be broken about January 20 for the buildings required, plans of which are practically complete. The new works will adjoin those of the Wisconsin Engine Company, whose members recently bought the patents and property of the Owen Thomas Motor Car Company, and are said to have a controlling interest in the organization just effected. It is expected that complete machines, including engines, will be turned out at Corliss.

The new foundry of the Milwaukee Stove Works, to which reference was made in *The Iron Age* last week, will be 110 x 270 ft., and probably of steel-concrete construction, as the intention is to have it fireproof. The location of the building will be in the center of the works. Equipment details have not yet been worked out, but, as nearly as possible, automatic apparatus will be provided.

The J. I. Case Plow Company, Racine, Wis., has entered into a contract with the Ohio Motor Car Company, Cincinnati, for the sale of the latter's product in Wisconsin, Nebraska and a part of Iowa. Some of the assembling will probably be done at the Case Works.

The International Harvester Company is proceeding with plans for the enlargement of its Milwaukee Works, and a large quantity of new machinery will be installed here by the close of the coming year.

The plant to be built by the Chicago, Milwaukee & St. Paul Railway Company at Tomah, Wis., for manufacturing railroad bicycles or hand cars, as recently reported in *The Iron Age*, will be rushed to completion. The operating schedule calls for 80 mechanics, so that the machinery list will be quite a large one.

The E. W. Clark Motor Car Company, Fond du Lac, Wis., will succeed the Worthing-Clark Automobile Company, Geo. W. Worthing having disposed of his interest.

Beginning January 1, automobiles will be built by the Wisconsin Carriage Company, Janesville, Wis., which has a new plant equipped for that purpose. The equipment of this, including machine tools and electric motors, will be considerably extended later on.

A large power plant will be built in the spring, at some point between Janesville and Madison, Wis., by the Cincinnati Construction Company, having offices in the latter place, which is laying out a new interurban railway. The company has ample capital, according to information filed with the State Railroad Commission, and will be able to contract for the best modern equipment.

A steel stack, tubular boilers, Corliss engine of 500 hp., electric generator and other power plant equipment will be required early in the coming month by the C. Reiss Coal Company, Sheboygan, Wis., whose contemplated extensions were recently forecasted in *The Iron Age*.

The American Bridge Company has received contract from the Oliver Iron Mining Company for the structural work in connection with docks at Coleraine, Minn., the electrical equipment of which is also said to have been purchased here.

A steel frame concrete mill, equipped with special paper making, power and pumping machinery, will be added to the plant of the John Hoberg Company, Green Bay, Wis. Motor drive has been decided upon.

The Graham Mfg. Company, Racine, Wis., is reported to have had plans prepared for a brass and aluminum foundry.

The plant of the Racine Mfg. Company, which was destroyed by fire with heavy loss, is to be rebuilt at once, according to the reports received here. It is stated that large financial interests are prepared to come to the aid of the company, if necessary, in order that the works may be reconstructed for large capacity and along the best lines of modern engineering, including introduction of the unit system.

The Symons Crusher, which is manufactured here by the T. L. Smith Company, has been meeting with a very extended sale, of late, among ore reduction plants in the North and West. Among the advantages claimed for this machine are the thick, stationary central shaft and short, stocky frame, which are said to impart greater strength than other similar types possess, even though of much larger size.

Reports current in some trade papers, to the effect that the machine department of the Reliance Works is being

transferred to West Allis to make room for converting that entire plant into a foundry seem to have originated in an extension of the floor space of the casting department at the former works. A visit to the shops, however, shows the usual machining in progress there, except that more hands are being taken on weekly.

The Mechanical Appliance Company, Milwaukee, of which Chas. Allis is president, has developed a new line of induction motors for industrial service.

F. W. Heinemann, Milwaukee, will build a plant of considerable size, the use of which it is said will be for motor vehicle manufacture.

Some power and refrigerating machinery is to be required before long by the Miller Brewing Company of this city for the plant of the Ascension Ice Company, Donaldsonville, La., which it has purchased and will improve.

Electrical equipment is being purchased by the Medford Lumber Company, Medford, Wis., for use in its planing mill.

The Upham Mfg. Company, Marshfield, Wis., has had plans drawn for converting its steam power plant into an electric generating station and using motor drive throughout the establishment. The present engine can probably be retained, but a dynamo of about 300 kw. is needed.

The Porcelain Enameling Association of America is preparing to put up a large plant at Sheboygan, Wis., and bids on the steel work are now being taken. Machinery, such as is commonly used in a plant of this kind, including power and electrical apparatus, will not be purchased until later, although the matter should be taken in hand now and specifications asked for. H. W. Johns-Manville Company, Milwaukee, have one of the contracts for material.

The Bain Wagon Company, whose recent extensions were reported, is planning the erection of another building, but this is said not to involve the purchase of any additional equipment. New electrical machinery is now being put in service.

Shredding and grinding machinery, pressure apparatus and power equipment will be among the requirements of the LaCrosse Rubber Mills Company for an addition to be erected in the spring to the company's plant at La Crosse, Wis.

It is proposed to build between Marinette, Wis., and Menominee, Mich., a steel bridge on tubular iron piers. Negotiations covering exact plans and specifications for the work are now in progress between the authorities of the two cities.

About $350,000 will be spent in improving the pumping plants and water distribution system of Milwaukee, if the recommendations of the city engineer are followed. One new engine was recently installed and another is being built, but a third will be urgently needed by the time the latter is ready for service.

Extension of the works of the Power & Mining Machinery Company, with remodeling and enlarging of the machinery equipment, is again predicted here as a result of changes in the operating force. These include the promotion of John D. Bird, former manager of the Henry R. Worthington Company to be general manager of the Power & Mining Machinery Company, and the transfer of 22 members of his executive force to the works at Cudahy. As reported in the *Iron Age* about seven months ago, a large acreage was secured adjacent to this plant for the purpose of making additions as soon as business had sufficiently improved.

Chicago Machinery Market.

CHICAGO, ILL., December 28, 1909.

The holiday period of dullness has many encouraging features which inspire machinery men with confidence for the future. Manufacturers and other buyers are inquiring about machines which they expect to buy during the coming year, and in many cases these inquiries give specific dates early in the year when they want to arrange for deliveries. Buyers are generally beginning to realize that they must look ahead in making provision for machine tools and other shop equipment, as the manufacturers of these goods are falling farther behind each month in their deliveries. The opinion prevails that the machine tool manufacturers have not kept pace with the general growth of the manufacturing industries of the country in the matter of shop capacity. While new industries are springing up by the thousands in the Mississippi Valley, creating a larger demand for machine tools, there has been no corresponding increase in the capacity of the machine tool shops, and an active buying movement after the first of the year may fill the books with all the business that can be taken care of next year.

The advance in the prices of lathes has given a sudden impetus to the demand for second-hand lathes in the past week or two, and there has been a good run of inquiries for other second-hand machines. The supply trade is very good and machine shop materials are also moving actively. Manufacturers are buying a great deal of material from store which they would ordinarily obtain direct from the mills. In special steels and other material from steel mills deliveries cannot be promised for several months, and in many cases the mills cannot make any specific promise and are apparently unwilling to take orders for carload shipments which they have solicited during less active periods in their business.

Cincinnati Machinery Market.

CINCINNATI, OHIO, December 28, 1909.

In machine tool circles there is little evidence of the Yuletide season save in the individual celebrations of the officials; for the customary dullness is in a great measure absent. This business is coming not so much through the dealers, but is direct, and the shops will continue with full forces right on through the merry-making so far as they may with forces willing. December will be recorded as a good month in the trade, particularly with the makers of lathes, milling machines, boring mills, shapers, drills and drill presses, and even planers.

The week has been marked with many meetings, some of them strictly of a business or trade nature; others semi and some wholly social. In the former category the meeting of the lathe makers on Thursday, December 23, at the Business Men's Club, was important. So many and so varied are the questions entering into standardization that the subject will have to be thoroughly threshed out ere the participants can hope to agree on a common ground. A number of the representatives interviewed state that there will undoubtedly be a raise in prices generally, made really necessary through the increased cost of skilled labor, castings, &c., and some are making ready to announce this raise the first of the year, from 5 to 10 per cent. being the range.

Secretary Manley of the Cincinnati Metal Trades Association has just finished his computation for the last quarter of the year. These figures are computed in percentages of increase and decrease, taking the conditions on June 15, 1907, as the basing point, or, otherwise 100 per cent. On September 15, 1908, the volume of business showed 53 per cent. of normal; December 15, 56 per cent.; March 15, 1909, 62 per cent.; June 15, 65 per cent.; September 15, 72 per cent.; December 15, 83 per cent. Thus conditions in this market in the tool and general machinery trade are now but 17 per cent. from normal; and it is estimated that at the present rate of increase the end of the first quarter of 1910 will see business quite up to the standards of those busy days of June, 1907.

A matter tending to disturb the trade, or at least a part of it at this time, is the efforts of the dealers to increase their commissions at least 2½ per cent. This is not true of the entire field, nor of all dealers apparently, but there are spots in which this feeling of unsatisfiedness is conspicuous. It is given out that nothing definite has been accomplished as yet along this line..

The joint meeting December 23 of the executive and entertainment committees of the Cincinnati branch National Metal Trades Association was one that will be remembered for a long time. B. B. Quillen of the Cincinnati Planer Company was the host at his home, 3040 Fairfield avenue, Walnut Hills. The guests of honor were: A. Marshall of the Marshall-Huschart Company, Chicago, and Mr. Reck of the Rockford Drill Company, Rockford, Ill. Mr. Quillen, in decorations, menu and entertainment of his guests kept in mind the festive season. Santa Claus distributed presents, mechanical toys, with the cleverest of local hits, all devised by the host. The next meeting will be at the home of L. G. Robinson of the J. A. Fay & Egan Company. Others present than those named were: A. E. Robinson, American Tool Works Company; E. Von Wyck, Von Wyck Machine Tool Company; John W. Neil, John H. McGowan Company; Henry Ritter, Lukenheimer Company; L. G. Robinson, Fay & Egan Company; August H. Tuechter, Cincinnati-Bickford Tool Company; Edward H. Hargrave, Cincinnati Tool Company; F. Le Blond, R. K. Le Blond Machine Tool Company; P. O. Geier, Cincinnati Milling Machine Tool Company; Raymond Jones, Cincinnati Planer Company; J. C. Hobart, Triumph Electric Company, and Secretary John M. Manley of the Cincinnati Metal Trades Association.

Architects Kettel & Rapp are taking bids on the new addition to the Modern Foundry Company, Oakley. The addition will be 30 x 90 ft. of mill construction and an extension of the plant in which castings have been manufactured for some time for the several institutions in that vicinity, headed by the Cincinnati Milling Machine Company and the Cincinnati Planer Company.

The Cincinnati Horse Shoe & Iron Company has rounded out an unusually prosperous year, and has just declared an initial dividend of 10 per cent., payable 2½ per cent. quarterly.

F. A. Peckham, sales manager of the Cincinnati Equipment Company, announces the purchase of the Ohio Steam

Shovel Company's business at Toledo, Ohio, and its removal to the first named place, where they are now building steam shovels and dredges under the name of The Ohio Steam Shovel & Dredge Company.

Work on the new additions to the Bowser plant in Fort Wayne is expected to be completed and the buildings ready for occupancy by January 1. The new sections will be used for the boiler and machine shops. The rooms used as machine shops will be fitted out with accommodations for the Fort Wayne sales department.

The F. G. Gaunnt Manufacturing Company, Fort Wayne, Ind., has just received an order from Manchester, England, for its automatic blending feeding machinery to the amount of $20,000, deliveries on which are to commence in January. The company is fitting up a new pattern and erecting shops, and as soon as this is completed additional equipment will be needed for the machine shop.

The Duplex Grinding Mill Company is one of the newer industries of Springfield, Ohio, which is preparing to make extensive improvements in the new year. The company was formed to continue the business of manufacturing feed mills under the patents of the O. S. Kelly Company, which has embarked in the piano player business. The officers are: George C. Lynch, president; W. H. Rayner, vice-president; Lawrence Layborne, secretary; Willis M. Wise, treasurer and manager, and with Harry Barr, constitute the board of directors.

It is now stated that the new sheet and tin plate mill at Wierton, W. Va., near East Liverpool, Ohio, built by the Phillips Sheet & Tin Plate Company of Clarksburg, W. Va., will commence operations about January 15 with over 1000 employees.

The Bucyrus Foundry Company is a new organization at Bucyrus, Ohio, formed to operate the Shunk foundry which when in active operation manufactured a collapsible sewer pipe. The work of remodeling is to begin at once. Ten per cent. of the capital stock was paid in, and an additional 65 per cent. has been called for. The directors are: John Shunk, D. F. Baumgartner, C. L. Morkel, John Gebhardt and F. E. Donnenwirth. The officers are: John Shunk, president; D. F. Baumgartner, secretary; F. E. Donnenwirth, treasurer, and C. L. Morkel, manager.

President J. S. Ralston of the Ralston Steel Car Company, Columbus, Ohio, is quoted as saying that the works will be running full in every department January 1. Business is reported increasing at a very satisfactory rate.

Announcement is made from Wheeling, W. Va., that both the Riverside and the Wheeling Steel & Iron Works will be closed for two weeks beginning December 24 to give employees the benefit of the holidays. Some extensive repairs and improvements will be made in both plants during this shut-down.

New England Machinery Market.

BOSTON, MASS., December 28, 1909.

The closing week of 1909 brings with it nothing but cheer for the machinery trade. December has proved a really good month in a majority of cases, maintaining practically the level of November, which was better than any previous month since the middle of 1907. In fact, the improvement, taking actual figures to demonstrate the fact, has been constant since August 1. The upward tendency is sure to continue, with a slight lapse, perhaps, immediately after New Year's, which is the usual experience. Deliveries are not improving, by any means. Increased production on the part of the manufacturers does not equal the growing demand. With the dealers more machines are being bought from the floors, purchasers picking up tools with a greater eagerness.

Announcements of industrial enlargements include the following: Joseph Benn & Son, Graystone, R. I., and Huddersfield, England, weave shed and spinning mill, 62 x 190 ft., for the main building, and 50 x 70 ft. for a secondary building, five stories; dye house of reinforced concrete, having 60,000 sq. ft. on the ground, and an additional story to the old dye house; American Woolen Company, picker and dye house at Royalston, Mass., 72 x 227 ft., concrete construction; Harry T. Hayward, Franklin, Mass., woolens, addition, 53 x 135 ft., two stories, mill construction; Hampton Company, Easthampton, Mass., textiles, two-story addition, 30 x 50 ft.; Charles L. Harding, Woonsocket, R. I., worsted yarn spinning mill, to contain 10,000 spindles; Otis Company, Three Rivers, Mass., hydro-electric plant to double the present power.

Announcements of important building enterprises, which carry with them the purchase of large items of equipment, include the following: Hotel Taft, New Haven, Conn., 110 x 235 ft., 10 stories, of brick, steel and cement, Frank S. Butterworth, New Haven, local representative of the syndicate which is financing the enterprise; naval hospitals at Newport, R. I., Chelsea, Mass., and Portsmouth, N. H., to cost $848,000, contract awarded to the Noel Construction Company, Baltimore; New Haven Hospital, New Haven, Conn., power plant; Fargo Real Estate Trust, Boston, nine-story warehouse, 122 x 479 ft. and 108 x 140 ft., nine stories; Suffolk Real Estate Trust, 10-story mercantile building, C. H. Blackall, architect; addition to Stock Exchange Building, Boston; Jordan, Marsh Company, Boston, nine-story addition to mercantile building; the Winsor School, Boston, $200,000 school building.

Increased dividend rates indicate that the year has ended prosperously with the industrial corporations. In all cases, so far as can be learned, they have been maintained, and the exceptions of the higher return to the stockholders are numerous enough to be taken into important account in estimating the general condition of business. In centers where the local industrials are listed the stronger tone is evident, the advance in values having been gradual but constant during the autumn and early winter.

The Prentice Bros. Company, Worcester, Mass., has redesigned its geared head high speed engine lathe with especial attention to the application of the motor drive. It is a single belt driven machine, with a spindle reversing mechanism in the head stock. For the motor drive all that is required is the installation of the motor and the bracket which supports it.

The Baush Machine Company, Springfield, Mass., manufacturer of multiple spindle drills, radial drills and vertical boring and turning mills, has made a number of changes in its universal joint department, including the addition of new machinery. The construction of the joint has been changed, the center block now being of hardened steel instead of bronze. The pins and forks are also hardened, the purpose being to give the joint a maximum efficiency and life.

W. & B. Douglas, Middletown, Conn., manufacturers of pumps, are increasing their manufacturing capacity by the installation of new machinery, including a 48 in. x 16 ft. McCabe lathe, a 42 x 48 in. x 10 ft. heavy pattern American planer and a set of rolling barrels made by W. W. Sly, Cleveland. The firm have added to their traveling staff George B. Turner, Birmingham, Ala., who will have charge of the southeastern territory, with the title of Southern sales manager, though his field will probably be larger than the name implies. He was formerly with the Dayton Hydraulic Machinery Company.

Harvey Hubbell, Inc., Bridgeport, Conn., is planning to add considerably to the facilities of the machine and machine screw department, in order that the company may be prepared to handle work in larger quantities and at a more rapid rate.

The Standard Foundry Company, Hartford, Conn., has increased its capital stock from $10,000 to $50,000, new capital being required to increase the plant.

The E. H. H. Smith Silver Company, Bridgeport, Conn., will require no equipment for the building which will be erected immediately. It will be 35 x 100 ft., two stories, of reinforced concrete construction, and will be used for offices, stock room and shipping room.

The Wright Wire Company, Worcester, Mass., will erect a one-story brick galvanizing building, 70 x 140 ft., of heavy mill construction, on land recently acquired. It will adjoin the present galvanizing building at the Worcester plant, the wooden portion of which structure will be removed as soon as the new building is finished. This will take away the last of the wooden buildings. The company has completed the wire rope department building at Palmer, Mass., which replaces the structure destroyed by fire some months ago. The machinery is now being set up and will be ready to operate in two or three months; it will be a thoroughly modern plant. Some of the smaller rope machines have been operating for several months in another building.

The business of the Royal Equipment Company, Bridgeport, Conn., will be divided between two distinct corporations, as a result of the settlement of the estate of the late Arthur H. Raymond, who controlled an important interest in the old company. The Raymond holdings will be incorporated under the old name of the Royal Equipment Company, and will take the lines of automobile accessories. The combustion engine department will be incorporated as the Royal Engine Company. It will occupy the present plant and will devote itself to the engine. The new Royal Equipment Company has taken the building on Housatonic avenue recently occupied by the Bridgeport Gas Light Company, it being necessary to secure larger quarters. The company has a paid in capital stock of $50,000. It will specialize on the Raybestos friction facing, an asbestos friction material originated by Mr. Raymond, and will manufacture the Raymond and Duplex brakes and the Besto and Stability friction facings.

Bridgeport, Conn., will have a trade school, in the curriculum of which will comprise tool making, general machine work, plumbing and carpentry. Charles D. Hine, secretary of the State Board of Education, has secured a location for the school in the three upper stories of the modern factory building of the Bridgeport Spring Perch Company.

The Worcester Pressed Steel Company, Worcester, Mass., will erect a new manufacturing building 90 x 110 ft., one story, with gallery, of wood and steel construction. The building is one-half the size of the present main structure

and is needed to take care of the rapid growth of the business. Other additions are proposed for the future, but definite plans have not yet been made.

The General Electric Company, Lynn, Mass., will erect an addition to its River Works, 56 x 180 ft., one story.

The Hobbs Mfg. Company, Worcester, Mass., manufacturer of paper box and woodworking machinery, will erect a four-story addition 50 x 70 ft., which will be occupied for the building of a new type of box machine. It is not yet determined what the machinery requirements will be, but the company states they will not be large.

The factory of the Ideal Plating Company, Marlboro, Mass., was destroyed by fire December 23, with a loss of about $40,000. Plans for new quarters will not be decided upon until the insurance has been adjusted, but factory space is available in the town if the company wishes it.

The Rhode Island Coal Company has begun the development of the old coal mine at Portsmouth, R. I., which was opened many years ago and has been idle for a long time. The officers include Henry M. Whitney and Eugene N. Foss. The initial plant is a small one, but preparations are being made for a larger output, which is set at 1000 tons daily by April, and 2000 tons by the end of the year. A power station will be installed immediately, and a crusher for the briquetting building is already in place. The briquetting process will be employed in converting the coal into good fuel.

New England, especially the western section, is much interested in the announced plan of the New York, New Haven & Hartford Railroad to extend the high speed electric line of the New York, Westchester & Boston Company to Danbury, Conn. It means shortening the distance between Pittsfield, Mass., and New York by 14 miles, which will afford quicker and more direct freight transportation as well as improved passenger service. Another important improvement will be the double tracking of the old Berkshire division of the New Haven system from Shelton to Hawleyville, a distance of 22 miles, for which $125,000 has just been appropriated.

An engineering undertaking of large magnitude will be the construction by the new Boston & Providence Interurban Electric Railroad, of a high speed electric line connecting these two important cities. It is given out on reliable authority that the financing of the enterprise has been arranged for, and that work will begin as soon as certain legal requirements are complied with and legal questions adjudicated. The line will run over private right of way from Forest Hills, the present southern terminus of the Boston elevated line, and will connect at Pleasant View, on the Rhode Island line, with the tracks of the Rhode Island Company, which controls the Providence system. Important towns will be traversed, including Hyde Park, Canton, Foxboro, Mansfield and Attleboro, in which are located important manufacturing industries.

Government Purchases.

WASHINGTON, D. C., December 28, 1909.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive the following bids:

January 11, schedule No. 2089, two gasoline engines; schedule 2088, 124 pneumatic drilling machines.

January 18, schedule 2093, four engine lathes, one turret lathe, one die sinking machine, one 6 ft. drilling machine, one No. 5 milling machine, one 15 in. slotting machine, one 24 in. planer.

January 25, schedule 2110, three air compressors.

February 1, schedule 2114, one 21 hp. engine.

Miscellaneous Machinery and Power Equipment.

Four new pumping engines, with a total maximum lift of 50,000,000 gal. daily, have been decided upon by the authorities at Pittsburgh, Pa., although formal approval of the plans is still to be obtained.

One or more additional hydroelectric power plants of large capacity, rivaling the famous Kern River projects in the same section, will be constructed by the city of Los Angeles in connection with the headworks of the new viaduct. A bond issue of $3,500,000 has been decided upon for the purpose.

Douglas & Co., Cedar Rapids, Iowa, are about to place contracts for power and electrical machinery for new factory buildings. Some equipment has already been ordered.

Repair shops, with motor driven tools, will be built by the Richmond, Manchester & Petersburg Railway at Manchester, Va.

An engine, dynamo, motors, &c., will be bought shortly by the Friedberger-Aaron Mfg. Company, Philadelphia, which has had plans drawn for a power plant with which to supply operating current to a new factory.

The plant of the Fremont Gas & Electric Company, Fremont, Neb., has been acquired by the American Gas & Electric Company, New York, which will remodel it and install new power machinery.

Some additional pumping equipment will probably be purchased in the near future for the water works at Winchester, N. Y., where extensive improvements have been authorized.

A kiln and manufacturing plant will be erected at Okeene, Okla., by the Southwestern Cement Plaster Company.

An electric generating unit of 500 to 600 kw. will be added to the plant of the West Side Electric Company, Bakersfield, Cal.

G. W. Hammers, Pueblo, Colo., is planning erection of a plow factory.

A power plant for city service will probably be built within a few months at Grangeville, Ind.

A combined pumping and electric power plant, hydraulically driven, will probably be constructed during the coming year by the municipal authorities at Chesaning, Mich.

The Granite Mfg. Company, Marble Falls, Texas, will in the near future enlarge and otherwise improve the equipment of its plant.

Power and planing mill machines will be required by the Dry Fork Company, War, W. Va., for a plant recently decided upon.

A number of motors will be purchased in the near future by the Cribben & Sexton Company, Chicago, for a new stove factory.

The Greeley, Colo., Street Railway Company is having plans drawn for a turbine power plant. Machinery may be purchased by February 15.

A power plant of 300 to 350 kw., including boilers, engine, dynamo, heater, pumps, condenser, &c., will be purchased by the Shuttleworth Brothers Company, Amsterdam, N. Y. A fire protection system is also to be installed.

If satisfactory arrangements are not made for taking over the water works and electric lighting station now operated by a private company, the city of Elkton, Mo., will build a new plant equipped with steam unit, motor driven centrifugal pump, compressor, &c.

The Detroit Valve & Fittings Company, Detroit, Mich., will build branch works at Wyandotte, Mich., equipped with electrically operated machinery. Commercial current may be used.

The Enid & Central Oklahoma Traction Company, Enid, Okla., which is beginning construction of a 65-mile line, will build a power plant at either end. Gas engines are favored as prime movers with alternating current dynamos direct coupled.

A machine shop for marine work will be established at St. Petersburg, Fla., by the Presstman-Caldwell Company.

Engines, dynamos and pumps will be contracted for shortly at Upland, Ind., where plans for a combined water and electric lighting station have been approved.

The project for a municipal power plant at Grand Forks, N. D., recently mentioned, has matured. Two boilers with mechanical stoker furnaces, Corliss engine, generator, heater, pumps, condenser, &c., will be required.

A producer plant, 250 hp., gas engine, electric generator, motor driven pump, switchboard and other apparatus will be bought within a few weeks for a municipal power and pumping station at Slater, Mo.

The Iowa Central Railway Company, Marshalltown, Iowa, is erecting an addition to its mechine shops 40 x 50 ft., providing more space for the tool room and the tin shop. The new addition is a part of the original improvements of the shop, the erection of which was deferred a year ago when the shops at Marshalltown were enlarged.

The Mayenberg Terra Cotta & Brick Company, with offices in the New York Life Building, Kansas City, Mo., will build a plant at South Coffeyville, Okla., with a capacity of turning out 150,000 building brick, 90,000 paving brick and 45,000 re-pressed brick. Present plans call for a temporary plant with a capacity of about 30,000 brick a day, after which work will be started on the main plant. The equipment of the plant when completed will consist of twelve 160 hp. tubular high pressure boilers six steam engines of 300 hp. each to drive the various machines independent of each other, and a 150 hp. engine to drive electric generators and motors to handle the brick from machine to kilns, to drive fans and other auxiliary machinery; also eight dry pan crushers for grinding shale, four brick making machines and 14 re-presses for the making of paving and front brick.

The Cement Products Company, C. F. Haglin, president, 229 Lumber Exchange Building, Minneapolis, Minn., is having plans prepared for a plaster plant to be erected in Blaine County, Okla., upon which construction work will probably be commenced early in the spring.

Some woodworking tools and power apparatus will be needed by Dorsey & Bone, Putnam, Conn., for a new handle factory.

Planers, molders, matchers, motors, exhaust fan, &c., will be installed by the Western Planing Mill Company, Wichita, Kan., in a new shop.

Machinery will be needed shortly for re-equipping the plant of Weishaar & Hummel, Joliet, Ill.

Specifications will soon be in readiness for machinery with which to enlarge the capacity of the municipal power plant at Quincy, Fla., although bids are not to be taken before February 1.

A boiler and engine to develop 75 to 100 hp. are needed by the Gehrlic & Shumiata Company, Wapakoneta, Ohio.

Corliss engines, with possibly an electric dynamo and motors, pressure machinery, grinding and mixing mills, elevators, conveyors, and special apparatus peculiar to the industry will be required by the Southern Minnesota Brick & Tile Company, Austin, Minn., for a new plant.

The Merson-Bacon Company, Bay City, Mich., is proceeding with plans for the erection of a new box factory to be electrically operated.

Machinery for a new plant is required by the Oakland City Planing Mill recently organized at Oakland City, Ind.

The Gallatin Valley Electric Railway Company, Bozeman, Mont., will require additional power machinery, including rotary converters and transformers, on completion of its extension to Belgrade.

New steam turbine generating units of large capacity will be contracted for early in 1910 by the Consumers' Electric Company, New Orleans, La., which now has a station equipped with vertical compound engines and alternating current generators.

Woodworking machinery, boiler, engine and motors are said to be needed by F. A. Drury, Morganton, N. C.

A machinery list of considerable size will be submitted to bidders about April 15 by the Teoga Traction Company, Wellsboro, Pa., which is planning to build a new turbine power plant and erect repair shops adjacent thereto. The company's lines are to be largely extended.

Improvements in the electric lighting system of the city of Richmond, Va., soon to be undertaken, will involve the purchase of a large number of transformers and other apparatus, including booster sets.

Machinery will be installed shortly in the Hanson-Ward Veneer Company's new factory at Bay City, Mich., and additional equipment, with electric motors, is to be bought later.

Construction of a pumping plant for city water service is the subject of plans at Cambridge, Pa.

Durant, Miss., will build water works. Details of equipment of the pumping plant have not yet been decided upon.

Specifications for water works equipment at Jackson, Miss., will be issued as soon as the necessary funds for purchasing have been provided.

Plans for a large power plant are being prepared by the consulting engineer of the new Pittsburgh, Chester & East Liverpool Street Railway Company, Pittsburgh, Pa. Before bids can be taken on machinery, however, arrangements may be made with one of the steel companies in the Pittsburgh District for supplying surplus electric power to the road from a combination blast furnace gas and producer gas plant.

Some heavy cutting, edging and power transmitting machinery, in addition to what has been already ordered, will be needed for the Kirby Lumber Company's new mill at Brownell, Texas.

A pump driven by gas or oil engine will be bought in January for municipal service at Harbor Springs, Mich.

Emporia, Kan., is contemplating improvements to its water works, which include doubling the capacity of its present reservoir and the installation of a new pump.

The Wheeler & Schebler Carbureter Company, Indianapolis, Ind., will erect a three-story factory to cost $40,000.

The installation of new electric generating equipment is contemplated by the San Angelo Ice & Power Company, San Angelo, Texas.

The Cadillac Machine Company, Cadillac, Mich., has prepared plans for a structural steel fabricating shop, 50 x 125 ft. to be built in the spring. The usual equipment of motor-operated tools and pneumatic appliances will be installed, together with power machinery, hand crane, hoist, &c.

The Hudson Chair Company, Hudson, N. C., is in the market for furniture machinery and power equipment.

The power plants of the Mexico, Santa Fe & Perry Traction Company, Mexico, Mo., will be completely built and equipped by Burns & Company, Chicago, Ill. Direct current generators are required, as the 1200-volt system is to be used.

A large quantity of tools, shafting, &c., including wood lathes, will be ordered shortly by the Marietta Chair Company, Marietta, Ohio. Motor-drive may be introduced.

Equipment will be provided in the near future for the power plant of the new Mid-Continent Traction Company, Tulsa, Okla.

A new plant, with electric power and pumping machinery, is to be erected at Darlington, S. C., by the Darlington Water & Electric Company.

Boilers, power equipment and special apparatus for clay products will be required shortly by J. H. McKenzie, Atlanta, Ga., for a new plant in which he is interested.

Boiler, engine, dynamo, exciter and switchboard for an output of 350 kw. will probably be purchased in the near future by the city of Dublin, Ga., to enlarge its present power station.

Engine unit, saw mill machinery, and possibly a lighting set will be required shortly by the Pike County Lumber Company, Tylertown, Miss.

Pumping machinery for handling water and sewage will be purchased about January 15 at Canyon, Texas.

The Fraser Lock Pipe Company will build a manufacturing plant at Sharon, Pa.

Specifications are understood to have been prepared for pumps and other machinery to be installed in a municipal plant at Lucas, Kan.

Power equipment and cutting machinery will be required by the Hannum Lumber Company, Atlantic City, N. J., for a saw mill.

Some new tools for repair work will be needed to replace equipment of the Louisville, Henderson & St. Louis Railroad Company, destroyed by fire at Cloverport, Ky.

Sawmill, planing, wood working and power machinery will be needed for the new electrically operated mills to be built by Thompson Bros. Company, Trinity, Texas.

Turbine water wheels and alternating current generators to develop 8000 to 10,000 hp. will be installed in the Colorado River in a power plant to be built by the Frisco Mines & Power Company, Kingham, Ariz.

A considerable quantity of saw mill machinery, as well as boilers, engines, shafting, dynamos, motors, air compressors, &c., will be required before next fall by the Emporium Lumber Company, Emporium, Pa.

The crushing plant of the Hite Cove Mining Company at El Portal, Cal., will be doubled in capacity. A hydraulic turbine and electric dynamo are also required to furnish the additional power necessary.

A manufacturing plant will be built in the Queenstown district of Birmingham, Ala., by the Colonial Stove Company.

A plant 70 x 160 ft. for the manufacture of gasoline motors and automobile parts will be built by C. C. Tuxbury, at Grand Rapids, Mich.

The plant of the Farmers' Handy Wagon Company, Saginaw, Mich., which burned recently with loss of $250,000, will be rebuilt for a larger output. If present plans are followed, a large quantity of motor-driven tools, with power equipment, will be required.

A machine shop and factory for the manufacture of pumps is under construction by the Goliad Irrigating Machinery Company, Goliad, Texas. Some of the equipment has been contracted for but more will be needed.

The Connecticut Company, Bridgeport, Conn., finds enlargement of its main power station necessary, and purchase of machinery is now under consideration.

A pumping engine or large end-packed triplex pump will be built within the next two months by the city of Greenville, Mich.

A battery of boilers and steam turbine unit of large size will be purchased in the near future by the Peoples Gas & Electric Company, Burlington, Iowa.

An automobile factory is to be erected at Kansas City, Mo., by the Stafford Motor Car Company, recently organized for the purpose.

Equipment will be contracted for early in the coming year by the National Spring Company for a new factory at New Castle, Ind. The main office of the concern is given as at St. Johns, New Brunswick.

J. Goldberg, Kansas City, Mo., is in the market for machinery with which to equip a new steel fabricating shop. Ground for the building has not yet been broken.

The Roanoke Electric Light & Power Company, Roanoke, Va., which has been incorporated for $1,000,000, will undertake an extensive hydro-electric development in that vicinity, using impulse turbines operating under a very low head.

The Success Machinery Company, recently formed at New Orleans, La., will put up a large manufacturing plant.

The Pontiac Light Company, Pontiac, Mich., has decided upon doubling the capacity of its power plant. A contract for operating current was recently made with the Oakland Motor Car Company of that place, and the latter will also require some electric motors in the near future.

A dock with machinery for complete electrical operation and control will be built by the M. A. Hanna Coal Company at Duluth, Minn. It is stated that the structure will be 3000 ft. long and 375 ft. wide, making it one of the largest, if not the largest, of its kind in the world.

A new factory, with electric power, will be built shortly to replace the plant of the Corn Belt Packing Company, Fort Dodge, Iowa, which has been destroyed by fire.

Lee Crow, Jonesboro, Ark., will be in the market about January 1 for an engine, boiler and machinery for a handle factory.

Plans for the building of a modern pumping engine plant at Vicksburg, Miss., to which reference was recently made, will be drawn by G. W. Fuller, of New York, whose report to the City Council is expected to be submitted by February 1.

Bids to be taken next month on electrical machinery for a new municipal power plant at Aylmer, Ont., and pumps for the water works will also be purchased in the near future.

A new factory, with electric power, sprinkler system, &c.,

will be built at Decatur, Ill., by the H. Mueller Mfg. Company.

The Asheville & East Tennessee Railroad Company, Asheville, Tenn., is reported to be planning an increase in its power facilities, including additional substation machinery, as a result of line extensions now being made.

The City Council of Lafayette, Ga., is asking for propositions for the installation of electric light and water works plants. Address C. J. Hammond, City Recorder.

Sealed proposals will be opened January 10 by the Water Committee, Petersburg, Va., for the installation of a pumping plant of 1800 gallons per minute capacity. R. D. Budd is city engineer.

It is stated that the E. Woeber Carriage Company, R. L. Woeber, president, Denver, Colo., will erect a large factory during the coming year.

J. E. Winter and associates, Macon, Ga., will build a $50,000 sewer pipe plant at Columbus, Ga., in which special machinery will be required. It is expected to operate the plant by electricity.

The Stoll Pressed Steel Company, Buffalo, N. Y., has recently been incorporated by Daniel H. Stoll, Charles G. Hornung and others, with a capital stock of $50,000, to manufacture automobile frames and metal stampings.

Marietta, Ga., whose proposed municipal power plant was mentioned in this paper some time ago, has decided upon the installation of two steam turbines and generators of 1000 hp. each, two 200 hp. motors and three small generators to be engine driven.

Plans will be prepared at once for water works at Lewisburg, Pa., to be operated by the city.

A hydro-electric plant will be built next summer near Augusta, Me., by the Spring Creek Power & Electric Company. John L. Bright, Lewiston, Me., is president.

Motors for operating its machinery will be purchased in the near future by the Indianapolis (Ind.) Glove Company, which has had plans prepared for a new factory.

An air compressor and two hoists are among the requirements of the Logan Company, Beaverdale, Pa.

Enlargement of its power plant or the erection of a new electric generating station will be required by the Missouri & Kansas Interurban Railway, Kansas City, Mo., upon completion of the proposed extension from Olathe to Lawrence. Dynamos driven by gas engines will probably be selected for the service.

At Guernsey, Wyo., bonds to the amount of $20,000 have been voted for a water works system, and details of the plan adopted can be obtained a little later on by writing to the city clerk.

Hoisting machinery, operated by pneumatic and electric motors, will be installed this winter by the Dunbar Stone Company, Detroit, Mich.

An engine of 500 hp. direct coupled to electric generator, together with boilers, pump, heater, condenser and other power plant accessories, will be bought by Geo. H. Brown, Rome, N. Y., for a new factory building.

New tools are to be purchased about February 1 for the West Burlington (Ia.) shops of the Chicago, Burlington & Quincy Railroad. It is probable that a heavy crane will also be added to the equipment.

A large line of alternating current motors, ranging in size from 5 to 200 hp. will be added to the plant of the Port Blakely (Wash.) Mill Company.

An electric dynamo and 75 hp. automatic engine will be bought shortly for the municipal power plant at Butler, Mo.

The D. Bacon Company, Harrisburg, Pa., will buy an engine and electric generator for its new factory building.

As predicted in this paper some weeks ago, the State authorities at Olympia, Wash., are providing for the erection and equipment of several new crushing plants, for which machinery in considerable quantity is required.

A pumping unit operated by steam, gasoline engine or electric motor will be purchased by the authorities at Vilisca, Iowa.

Some additional tools and other equipment are said to be required by the Chicago, Milwaukee & St. Paul Railway, for the proposed enlargement of repair shops and roundhouse at Mobridge, S. D.

The installation of a pumping plant and water works system has been practically decided upon at Dumas, Ark. Bids will probably not be taken, however, before February 1.

The Lexington Motor Car Company, Connersville, Ind., will install an electric dynamo of about 100 hp. and accessory apparatus.

Plans for a new water works system at Fort Logan, Colo., to which reference was recently made in the *Iron Age*, also comprise an electric power plant.

Some new concentrating machinery is to be added this winter to the plant of the Desloge Consolidated Lead Company, Desloge, Mo.

The Michigan Veneer Company, Alpena, Mich., whose proposed power plant extension has heretofore been mentioned in the *Iron Age*, will require an engine of 150 to 200 hp. Other machinery is to be purchased later.

The Charleston (S. C.) Consolidated Railway, Gas & Electric Company, Charleston, S. C., is opening negotiations for the purchase of a steam turbine generating set, the probable capacity of which will be 1500 hp. No contract will be let, however, much before February 1 or 15.

A number of additional motors for machinery drive are to be installed in the works of the General Chemical Company, Newell, Pa.

A motor driven centrifugal pump of small capacity is needed for the new sewage disposal works at Louisville, Ohio.

The Mineral Mining Company, Iron River, Mich., will erect a steel shaft house at the James mine. It is also stated, although without confirmation, that a hoist, compressor, skips and other equipment will be needed.

The North Fork Smelting & Mining Company, recently organized at Enaville, Idaho, has erected an experimental smelter, and if the results justify it, a custom plant is to be built. The latter will involve a large contract for machinery and furnaces.

Improvements will be made about March 1 in the Rapid City (S. D.) Electric Light Company, including possibly the installation of a new dynamo.

Installation of a combined gravity and pumping system for water supply is projected at Koosharem, Utah.

Improvements to the water works system at Bloomington, Ill., recently predicted in this report, will include two tubular boilers and a horizontal compound pumping engine of 5,000,000 to 6,000,000 gal. daily lift.

Montgomery, Ala., which has one of the best systems of water works in the South, its first compound pumping engine unit having been adopted as the type of a leading builder of these machines, is considering the erection of another pumping station to furnish water exclusively for industrial purposes.

One large hydro-electric plant, or two of moderate capacity, will be built on the Flathead River by the Root Mountain Water Power Company of Kalispell, Mont.

A fully equipped power plant and wood working tools will be purchased in the immediate future by the Loughren Cabinet Works, 107 S. Seventh street, St. Louis, Mo., for a factory building in a new location.

Ground was recently broken for the new shops of the Moline Plow Company, Moline, Ill. Most of the machinery required is understood to have been already purchased, but more will be needed later.

A movement has started at Winslow, Ind., to organize a company to put in a system of water works, after the effort to get the Town Board to authorize a municipal system failed.

The Pittsburg-Hickson Bedstead Company of Butler, Pa., is erecting new buildings on the site of those burned two years ago at Muncie, Ind. This plant will supply the Western trade.

An electric light plant to cost $18,000 will be constructed at Beaufort, S. C. R. A. Long, W. F. Marscher and W. J. Thomas are commissioners of public works and have the project in charge.

The William J. Lemp Brewing Company, St. Louis, Mo., will add a new boiler house. It will install O'Brien boilers of 5000-hp. capacity, chain grates, Laclede-Christy stokers and Link-Belt coaling apparatus.

The Standard Supply & Mfg. Company, Hutchinson, Kan., has been incorporated to manufacture metallic packing for engines, flue cleaners, &c. R. P. B. Wilson is president; P. Dorsey, vice-president and general manager; Dr. A. C. Potter, treasurer, and W. M. Potter, secretary.

A small crusher is required by the Ideal Marblith Company, Hammond, Ind.

The erection of a new power plant unit is under consideration by the Morris County Traction Company, Morristown, N. J.

A municipal lighting station has been proposed at Columbia Falls, Mont., and plans are now being drawn by order of the authorities.

Improvements in its power generation and distribution system, involving the purchase of some new apparatus, are contemplated by the Woodstock Electric Company, Woodstock, Vt.

A power plant will be provided for by the Apex Mining Company, Chesaw, Wash., to operate electric motors and pneumatic tools. Considerable equipment of this nature is required.

Power equipment, including 10 tubular boilers, pumps, heater, &c., will be bought for the State buildings at Kings Park, N. Y.

Brantley Bros. Mfg. Company, Memphis, Tenn., will extend its facilities for the manufacture of tanks and reservoirs.

Transformers and motors for industrial service will be among the requirements of the Arizona Power Company,

Prescott, Ariz., which is likely to be buying apparatus at intervals throughout the coming year as its new power transmission and feeder lines are extended.

An elevated steel reservoir and possibly rotary pump will be required shortly by the municipality of Crystal Springs, Miss.

Steam turbine and generator of 300 kw. are to be installed at Mason City, Iowa, by the Peoples Gas & Electric Company, which is now taking bids.

Stone & Webster Company, Boston, are reported to have decided upon a 500 kw. generator, steam turbine and other machinery for enlarging the plant of the Pensacola Electric Company, Pensacola, Fla.

The Foster Switch Company, Fillmore, Ind., will build a plant in which to manufacture equipment for steam roads and electric traction lines. Machinery details have not yet been fully determined upon.

At Peru, Neb., a system of pumping and distributing water is to be provided in the near future.

Three large horizontal tubular boilers are required for one of the municipal buildings at Troy, N. Y.

Three engine driven centrifugal pumps, boilers, electrical machinery and other apparatus will be purchased early next month by the city of Grand Rapids, Mich.

The Eagle Cotton Oil Company, Meridian, Miss., is said to be in the market for an engine, dynamo and boiler.

A pumping station and electric power plant for municipal service will be constructed at Upland, Ind.

The Geo. E. Seidel Company, Richmond, Ind., has acquired the plant of the Kramer Mfg. Company for an automobile factory. Metal working and power machinery will be needed.

A 15-ton electric crane and pneumatic hoist are needed for the Turkey Creek pumping station at Kansas City.

Pumping machinery will be bought shortly for a water system decided upon this week by the authorities at Cold Spring, Minn.

A municipal power plant is proposed for Hollywood, Cal.

Two pumps capable of delivering 250,000 gal. daily, together with power and electrical equipment, will be installed by the city of Marion, Kan. A steel reservoir is also to be erected.

The Virginia Passenger & Power Company, Richmond, Va., which has a 4000 hp. turbo-generator in service will purchase a similar unit of smaller capacity, if present plans are approved.

A motor driven centrifugal pump of moderate capacity is required for municipal service at Montrose, Colo.

The Octave Mining Company, Prescott, Ariz., which has decided upon the expenditure of a large sum for development work, will be in the market for motor operated hoists, compressors and other machinery in the near future.

A new battery of boilers, engine driven dynamos and other machinery for one or more complete power plant units will be required by the Paris Electric Company, Paris, Ky.

The Central Station Engineering Company, Evansville, Ind., C. A. Gillham, secretary and general manager, is seeking franchise for a central heat, light and power plant to be established in that city, at an estimated cost of about $1,000,000.

Arrangements are being made by the Niagara & Erie Power Company to extend its transmission lines to the Brooks plant of the American Locomotive Works at Dunkirk, N. Y., and furnish electric power for the use of that plant.

The La Salle Supply & Construction Company, of Monticello, Ind., has been awarded contract for construction of the Indiana Northwestern Traction Company's railway. The latter company has purchased the Chicago Heights & Eastern Electric R. R., which will give it terminal facilities in Chicago.

B. M. Everson, German National Bank Building, Pittsburgh, dealer in locomotives and new and second-hand equipment, reports an increased number of inquiries for used machinery in the line of mill engines, rolling mills, locomotives, etc., and that he has during the last month bought and sold more of such machinery than for some time in the past. He reports inquiries and prospective business for the future to be larger than at any time for some months.

The Standard Mirror Company, Buffalo, William Laffodny, president, 63 Carroll street, is in the market for grinding and polishing machinery for its new plant on Milton street and the Pennsylvania Railroad; also for two 75-hp. boilers, two automatic stokers, one 75-kw. direct connected engine and generator and twenty-five 1½-hp. motors, or ten larger horsepower motors.

The Augusta-Aiken Railway & Electric Company, James U. Jackson, vice-president, Augusta, Ga., will construct a terminal station to cost about $20,000 and add some machinery to its power plant.

The Improved Carburetor Company has been organized at Indianapolis, Ind., and incorporated, with $5000 capital stock, to manufacture carburetors. The incorporators are George F. Kreitlein, Garrett W. Hendricks and Willie J. Woodward.

Trade Publications.

Traction Engines.—M. Rumely Company, La Porte, Ind. Catalogue. Describes a line of traction engines for plowing, hauling material for contractors and threshing. Numerous illustrations of the various features of these engines are included, together with a more or less complete description of each part shown.

Metal Shop Furniture.—The New Britain Machine Company, 22 Chestnut street, New Britain, Conn. Pamphlet. Illustrates and describes a complete line of iron and steel furniture and appliances for use in machine and forge shops, including tool and work racks, lathe pans, shop shelving, revolving screw racks, stools, waste cans, ladders, bench legs and benches, stock racks, polishing jacks, vise and polishing stands, saw clamps and vertical cylinder grinders. Illustrated descriptions of the polishing jack and polishing stand appeared in *The Iron Age*, March 7, 1907, and November 26, 1908, while others have been described at different times. The pamphlet is punched to fit a loose leaf price book.

Tool Holders.—Armstrong Bros. Tool Company, 339-357 N. Francisco avenue, Chicago, Ill. Catalogue No. 18. Describes a line of tool holders with inserted self-hardening steel cutters for turning, planing, boring, slotting, threading, cutting off and drilling. Other specialties for machine shops are also shown.

Direct Current Test Meter.—General Electric Company, Schenectady, N. Y. Bulletin No. 4708, superseding No. 4615, describes in more or less detail an instrument recently placed upon the market for wattmeter testing. It is stated that this meter possesses all the requirements for rapid and accurate testing which is of prime importance to all plants supplying electricity for light and power.

Arc Lamps.—General Electric Company, Schenectady, N. Y. Circular No. 3880. Describes a new type of arc lamp burning carbons of very small diameter and giving a very high efficiency. Among the advantages claimed for this lamp are a uniform distribution of light at all times and an exceptionally low cost of maintenance.

Engine Lathes.—Schumacher & Boye, Cincinnati, Ohio. Mailing card. Shows all the styles and sizes of instantaneous change gear engine lathes made by this firm. Special features mentioned are the double back geared head stock, a double plate apron and the gear box.

Blue Printing Machines.—Buckeye Engine Company, Salem, Ohio. Pamphlet. Illustrates and describes a single lamp, vertical cylinder type of machine for making reproductions of original drawings in the form of blue, black, brown and Van Dyke prints in large numbers at low cost. Tabulated data giving the amount of money saved in a number of cases where a machine was installed is appended.

Mechanics' Tools.—Lancaster Machine & Knife Works, Lancaster, N. Y. Catalogue No. 18. The tools shown and described in the catalogue are ratchet, pawl and straight braces, combination corner braces, breast drills, drill sockets, center keys, drills and an attachment for lathe work. The corner brace combines in one tool a ratchet, straight and corner brace, and is particularly adapted for the use of electricians, cabinet makers, builders and for rapid screwdriving. The attachment for lathes is designed to bore many shapes, such as ovals, squares and polygons with rounded corners and concave sides.

Derails.—Hayes Track Appliance Company, Geneva, N. Y. Circular. Illustrates a number of installations of Hayes derails in track in the vicinity of Chicago. None of the views in the circular are of construction details, but all show the derail as actually placed with operating mechanism and adjacent tracks which have to be protected.

Steam Turbines for Fire Boats.—General Electric Company, Schenectady, N. Y. Bulletin No. 4702. Indicates the advantages to be obtained from the use of the horizontal Curtis steam turbine in connection with the pumping equipment of fire boats, such as economy of space, efficiency of operation and lack of vibration. Various installations of these turbines on the fire boats stationed at New York and Chicago are illustrated and described.

Electric Automobile Appliances.—General Electric Company, Schenectady, N. Y. Pamphlets Nos. 3878 and 3874. These two pamphlets are of especial interest to automobile owners. The first illustrates and describes the method of charging electric automobiles from alternating current circuits by the mercury arc rectifier and lists a number of rectifiers of various capacities. The other shows the advantages of electric light in general, and tungsten lamps in particular, for automobile use. For the convenience of those owners who contemplate wiring their cars themselves, a wiring diagram is included.

Cements for Iron and Steel Castings.—The Clark Cast Steel Cement Company, Shelton, Conn. Circulars. Two kinds of cement are described: one for perfecting castings by filling blow holes, cracks, cold shuts, and all other defects permanently and having the repaired portion match the balance of the casting in all respects. The other is a compound for making joints in boilers and cylinders which will not be affected by hot or cold

water, steam or oil. The metallic powder that is the basis of the cement when mixed with a patent chemical supplied by the manufacturers will, it is claimed, make permanent repairs.

Rail Carbon Steel Shapes.—Inland Steel Company, First National Bank Building, Chicago, Ill. Pamphlet. Covers the line of rail carbon steel shapes made at the Chicago Heights plant of this company. This includes plain and twisted concrete reinforcing bars, plain bars, angles, zee bars, tees, harrow channels and U and I bars, cultivator beams, channeled flats, channels, plow channels, cultivator axle caps, harrow teeth, cross arm braces and pole steps. Illustrations with dimensions of all these different shapes and tables of weights and prices are included.

Power Air Compressors.—Chicago Pneumatic Tool Company, Chicago, Ill. Circular. Describes the Franklin high speed air compressor, type GH. The advantages claimed for this compressor are increased volume of air per stroke, less noise in operation, reduced first cost, decreased floor space, less expensive foundation, high efficiency and economical maintenance. These compressors are built for belt, rope, chain or gear drive or direct connection to steam or gas engine.

Reamer Holder.—Colburn Machine Company, Franklin, Pa. Bulletin No. 40. Describes a floating reamer holder for use in vertical boring mills. This holder is made in two sizes and will hold any make or style of reamer having a Morse taper shank. An illustrated description of this holder was published in *The Iron Age* November 25, 1909.

Gear Cutting Machines.—Gould & Eberhardt, Newark, N. J. Folder. Illustrates high duty shapers, automatic gear cutting machines for all sizes and styles of gears, and rack cutting machines in different capacities and lengths. As illustrated the machines are equipped for belt drive, but direct connected electric motor drive can be applied to any machine if desired. An illustrated description of a motor driven high duty shaper appeared in *The Iron Age* March 4, 1909.

Milling Machines.—Cincinnati Milling Machine Company, Cincinnati, Ohio. Catalogue, 6 x 9 in., 160 pages. Covers the entire line of milling machines made by this firm and illustrates the complete machines as well as the different parts. Improvements in the cone driven machines have been made, particularly in the design of the column and the feed mechanism. In connection with the high power single pulley machines, some examples of the great productive capacity of these machines are shown. A large number of attachments which can be supplied for these machines are also shown and described. A chapter on the erection and care of milling machines is included, together with a table of speeds for milling steel, cast iron and brass.

Vertical Surface Grinder.—Pratt & Whitney Company, Hartford, Conn. Pamphlet. Pertains to a new type of surface grinder recently brought out by this company. This machine is claimed to grind from 12 to 20 times faster than any other surface grinder, due in part to the cup shape of the grinding wheel, which covers the entire width of the work and insures flatness together with rapid reduction. The illustrations show the method of fitting pieces to be ground in the machine and also different kinds of work that has been done on this grinder.

Metal Working Machinery.—Schuchardt & Schütte, 136 Liberty street, New York City. Five pamphlets. One illustrates and describes a cam milling machine to form cams on shafts; another a line of portable hand power shears for cutting all kinds of steel shapes without distorting the section, and a third an automatic machine for rounding the ends of gear teeth. The fourth pamphlet covers the Atlas worm gear chain blocks with automatic brake for hoisting in shops of all classes. An electro-magnetic instrument for testing the hardness of steel is described in another booklet. The shears and the hardness testing instrument were illustrated and described in *The Iron Age* November 7, 1907, and April 9, 1908, respectively.

Electric Mine Hoists.—Lidgerwood Mfg. Company, 96 Liberty street, New York City. Bulletin No. 7. In addition to showing the regular line of direct and alternating current single and double drum hoists, illustrations and descriptions are included of special hoists recently built by this firm for various purposes. Among the latter are single and double drum skip hoists for blast furnaces furnished the Carnegie Steel Company and the National Tube Company and a car haul hoist installed on the pier of the Virginia Railway Company at Sewall's Point, Va. An illustrated description of this last was printed in *The Iron Age* July 22, 1909 in connection with an article relating to the railroad plant.

Dredging Machinery.—Wetherill Bros. Machine Company, Chester, Pa. Catalogue. Illustrates the general character and gives some idea of the variety of the machinery built by this concern for handling mud, sand and gravel. Either complete suction, scoop or clam shell plants or merely the machinery can be furnished, while if necessary special machines for particular work will be built.

Steam Specialties.—Albert Schade Company, 56-58 North Second street, Philadelphia, Pa. Catalogue No. 1. Devoted to all kinds of specialties for users of steam and as a general thing lists only one accepted standard make of the different articles. Tables of dimensions accompany the devices illustrated wherever possible, and a complete index facilitates the finding of any desired article.

Steel Split Pulleys.—Pennsylvania Steel Pulley Company, Pittsburgh, Pa. Booklet. Pertains to the Keystone line of steel split pulleys, which are made in all standard sizes from 12 to 60 in. in diameter and with faces 3 to 16 in. across. Tables of horsepower transmitted by belts and circumferential velocities for different sizes of pulleys and various speeds are included. The different types of pulleys and the details entering into their construction are shown.

Lifting Magnets.—The Electric Controller & Mfg. Company, Cleveland, Ohio. Catalogue. Illustrates these magnets in actual use at a number of large industrial plants, describes the details of construction and operation, and contains a list of plants using this type of lifting device.

Contractors' Supplies.—Al. H. Hoffman, 327-328 Hutton Building, Spokane, Wash. Monthly bulletin. Devoted to the listing and illustrating of various kinds of supplies and equipment for contractors, railroads, mines and builders.

Structural Shop Machinery.—Wiener Machinery Company, 50 Church street, New York City. Pamphlet. Covers the S. & N. line of tools for cutting structural material and other machinery for structural shops. The machines shown include several types of heavy duty and portable beam shears, double angle shears, combination bar and angle shears, and a coping machine.

Humidifiers.—Warren Webster & Co., Camden, N. J. Pamphlet. Deals with the development, use and possibilities of air washers and humidifiers, and shows by a number of illustrations what the Webster air washer and humidifier is and how it does its work.

Motor Trucks.—Minneapolis Motor & Truck Company, 209 Palace Building, Minneapolis, Minn. Pamphlet. Pertains to the three models of motor trucks built by this firm, which are all briefly described.

Steel Preservative Coating.—The Goheen Mfg. Company, Canton, Ohio. Folder. Directs attention to the use of its carbonizing coating for preserving steel bridges, and shows the Union Pacific Bridge over the Missouri at Omaha, which was painted with this preparation in 1906.

Steel Poles.—Franklin Steel Company, Franklin, Pa. Booklet, 7 x 10 in., 14 pages. Illustrates and describes the Tripartite steel pole for all forms of overhead construction, such as trolley, telegraph, telephone, electric light and power transmission work. This pole is made of three U bars of steel, and it is stated that while the pole will last for a number of years without painting, when so protected it is practically indestructible.

Electrical Machinery and Supplies.—Sprague Electric Company, New York City. Bulletin and pamphlet. Bulletin No. 110, superseding No. 107. Devoted to type S continuous current generators having a capacity of 25 kw. and upward. The illustrations include completed machines and parts and also interior views of plants where Sprague generators are installed. Pamphlet No. 434, covering the Sprague Multilet outlet box for electric lighting work. This is a stamped steel knockout box, that is made in two sizes for use with rigid conduit, Greenfield flexible steel conduit or BX conductors. Each size of box is made with six outlets for use with ½, ¾ or 1 in. conduit, and all standard covers can be furnished for either size.

Electrical Supplies.—Central Electric Company, 264-270 Fifth avenue, Chicago, Ill. Price-list and discount sheet. Gives the latest discounts applying to catalogue No. 26 and refers to the articles by both page and code number so that discounts may be easily figured. New apparatus and devices brought out since the catalogue was issued are also illustrated and described.

Protecting Iron and Steel.—The Meaker Company, 44-50 North Elizabeth street, Chicago, Ill. Catalogue. Contains a description of the methods employed to protect iron and steel from corrosion by galvanizing and illustrates the machinery used in the process.

Electrical Medical Apparatus.—Manhattan Electrical Supply Company, 17 Park place, New York City. Folder. Devoted to massage vibrators and appliances, and various types of medical apparatus with electrodes.

Portable Hoists.—S. G. Milton & Son, Milton, Pa. Folder. Gives sizes, prices and capacities of a line of flat and low down base portable hoists and cranes built by this firm and designed to supplement the overhead and jib cranes in a shop.

Electric Lights and Sundries.—Fox Brothers & Co., 126-130 Lafayette street, New York City. Circulars. Pertains to the Fox line of contact couplings for arc lamps, Polar flaming arc lamps and carbons for either alternating or direct current, Radiante lamps for direct current only, and the Carbone lamps for show window illumination. An illustrated description of the Polar flaming arc lamp was printed in *The Iron Age* December 9, 1909.

Vanadium Steels.—American Vanadium Company, Frick Building, Pittsburgh, Pa. Booklet. A short treatise on the different kinds of vanadium steels, their classification and heat treatment, with directions for the application of vanadium to

iron and steel. An alphabetical list of applications of vanadium steel to commercial uses, with the grade and treatment recommended, is given, as well as illustrations of the uses to which the different types are put.

Pumps and Hay Tools.—F. E. Myers & Bro., Ashland, Ohio. Calendar. Illustrates a large and varied assortment of goods manufactured by this firm, including windmill, hand and power operated pumps, hay unloaders, hay forks, pulleys, door hangers and tracks.

Polyphase Induction Motors.—Wagner Electric Mfg. Company, St. Louis, Mo. Bulletin No. 89. Covers the BW type of polyphase induction motor. The special features of this machine are all described, together with the locations where these motors are especially well suited. Two typical installations are shown, one of which is a centrifugal pump where the stopping and starting of the motor driving it is controlled by a single-throw switch actuated by a float, a thing that is made possible, it is stated, by the simplicity of the motor control feature.

Steel Sheet Piling.—Jones & Laughlin Steel Company, Pittsburgh, Pa. Folder. Refers to a patented type of sheet piling manufactured by this firm in which the sections are standard I-beams designed especially for deep and heavy work. When the sections are no longer needed as piling they can be used if desired for structural or other purposes.

Valves.—Golden-Anderson Valve Specialty Company, Fulton Building, Pittsburgh, Pa. Catalogue No. 12. Illustrates and describes an extensive line of valves for many different uses made by this concern. One of the types is a cushioned non-return valve, which, it is stated, combines the functions of an automatic nonreturn valve, an automatic safety stop valve, an automatic emergency stop valve, and a hand stop valve all in one.

Electric Locomotives and Trucks.—The Atlas Car & Mfg. Company, Cleveland, Ohio. Bulletin No. 1090. Shows some of the locomotives, trucks and special cars built by this firm in which a storage battery or trolley either singly or in combination furnishes the motive power. The locomotives are intended for use around industrial plants or in mines, and the trucks may be utilized for the transportation of practically every kind of bulky and heavy goods. The cars are specially built to meet the requirements of the different plants where they are to be used, such as quarries, brick yards, smelting plants and coke plants.

Power Transmission Machinery and Supplies.—Dodge Mfg. Company, Mishawaka, Ind. Booklet, entitled "Dividends and Drives," 6 x 9 in., and folder. The first pertains to the Dodge line of power transmission machinery and illustrates a number of installations. The folder describes and illustrates pulleys, hangers, bearings, friction clutches and rope drives.

Superheaters.—Power Specialty Company, 111 Broadway, New York City. Catalogue. Illustrates and describes the Foster superheater with particular reference to the special features found in it. A number of illustrations of superheaters in actual use and a brief description of some specialties for use with superheated steam are included.

Centrifugal Pumps.—Alberger Pump Company, 95 Liberty street, New York City. Catalogue C, 6 x 9 in., 48 pages. Covers the different styles of centrifugal pumps manufactured by this concern and adapted for operation by direct or belt connection to any type of prime mover. There are a number of illustrations of different combinations of pumps and prime movers and sectional views showing the constructional details of the pumps.

Safety Valves.—The Consolidated Safety Valve Company, 85 Liberty street, New York City. Catalogue, 6 x 9 in., 80 pages. Shows and describes different styles of pop safety valve for stationary and marine use, also water relief, house heating, portable and locomotive types. The results of three years' testing to secure data on the subject of safety valve capacity are also given, and it is believed that this is the first time that the actual relieving capacity of a safety valve in pounds of steam per hour has been determined. Tables of dimensions and capacities of the different valves are included.

Motor Vehicle Wheels.—Jackson Wheel Company, Fisher Building, Chicago, Ill. Pamphlet. Devoted to the Jackson wheel for all types of motor cars and trucks. The advantages claimed for this wheel are increased resiliency due to the fact that the hub is suspended by a series of coiled springs from the rim, and all the load of the car is carried by the springs in the upper half of the wheel.

Upright Drills.—J. E. Snyder & Son, Worcester, Mass. Catalogue. Contains illustrated descriptions of the vertical drilling and tapping machines which have been a specialty with this firm for 25 years. All the different sizes and styles are shown. The illustrations occupy alternate pages, and brief descriptions, with tables of dimensions, the facing pages. The 21-in. power feed drill was described in *The Iron Age*, April 29, 1909.

Electric Portable Tools.—Chicago Pneumatic Tool Company, 1010 Fisher Building, Chicago, Ill. Bulletins. No. E-2 is devoted to the Duntley air cooled direct current drills for boring holes from ⅜ to 4 in. in diameter in iron or wood, while No. E-3 covers alternating current drills having a capacity of ⅜ to 1½ in. Portable and stationary grinders for either alternating or direct current are described in No. E-5. No. E-6, superseding No. E-1, deals with 550-volt direct current tools for street railroad work, such as spike drivers, track drills and portable grinders. No. E-7 is devoted to a portable electric hoist. An illustrated description of the grinders and the hoist was printed in *The Iron Age*, June 20, 1907.

Agricultural Machinery.—M. Rumely Company, La Porte, Ind. Catalogue, 7 x 9¾ in., 32 pages. Illustrates and describes a line of engines for use on farms together with grain separators, stackers and clover and alfalfa hullers and feeders. The different parts of the various machines are described with regard to both construction and use, and the description is supplemented by illustrations.

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CURRENT METAL PRICES.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from store—

Refined Iron:	
1 to 1⅞ in. round and square	₩ lb 2.00¢
1½ to 4 in. x ⅜ to 1 in.	₩ lb 2.00¢
1½ to 4 in. x ¼ to 5-16	₩ lb 2.20¢
Rods—⅝ and 11-16 round and square	₩ lb 2.20¢
Angles:	Cts ₩ lb
3 in. x ¼ in. and larger	2.25¢
3 in. x ⅜ 16 in. and ⅛ in.	2.50¢
1¼ to 2½ in. x ¼ in.	2.35¢
1½ to 2⅝ in. x 3-16 in. and thicker	2.25¢
1 to 1¼ in. x 3-16 in.	2.35¢
1 to 1¼ x ⅛ in.	2.45¢
⅞ x ⅛ in.	2.55¢
⅝ x ⅛ in.	2.65¢
⅝ x ⅛ in.	3.70¢
½ x 3-32 in.	4.50¢
Tees:	
1 in.	2.80¢
1¼ in.	2.60¢
1½ to 2½ x ¼ in.	2.30¢
1½ to 2½ x 3-16 in.	2.50¢
3 in. and larger	2.30¢
Beams	2.25¢
Channels, 3 in. and larger	2.25¢
Bands—1½ to 6 x 3-16 to No. 8	2.45¢
"Burden's Best" Iron, base price	3.25¢
Burden's "H. B. & S." Iron, base price	3.05¢
Norway Bars	3.50¢

Merchant Steel from Store—

	per lb
Bessemer Machinery	2.00¢
Toe Calk, Tire and Sleigh Shoe	2.50@3.00¢
Best Cast Steel, base price in small lots	7¢

Sheets from Store—

Black	One Pass, C.R Soft Steel.	R. G. Cleaned.
No. 16	₩ lb 2.90¢	3.00¢
Nos. 18 to 21	₩ lb 2.95¢	3.10¢
Nos. 22 and 24	₩ lb 3.05¢	3.20¢
No. 26	₩ lb 3.10¢	3.30¢
No. 28	₩ lb 3.20¢	3.50¢

Russia, Planished, &c.

Genuine Russia, according to assortment	₩ lb 12 @14½
Patent Planished, W. Dewees Wood	₩ lb A, 10¢; B, 9¢ net.

Galvanized.

Nos. 14 to 16	₩ lb, 3.30¢
Nos. 22 to 24	₩ lb, 3.55¢
No. 26	₩ lb, 3.75¢
No. 28	₩ lb, 4.10¢

No. 20 and lighter 36 inches wide, 25¢ higher.

Genuine Iron Sheets—Galvanized.

Nos. 22 and 24	₩ lb .5 75¢
No. 26	₩ lb .6.25¢
No. 28	₩ lb .7 25¢

Corrugated Roofing—

2½ in. corrugated.	Painted	Galvd.
No. 24	₩ 100 sq. ft. $3.85	4.90
No. 26	₩ 100 sq. ft. 2.95	4.00
No. 28	₩ 100 sq. ft. 2.60	3.75

Tin Plates—

American Charcoal Plates (per box.)

"A.A.A." Charcoal:	
IC, 14 x 20	$6.35
IX, 14 x 20	7.90
A. Charcoal:	
IC, 14 x 20	$5.40
IX, 14 x 20	6.50

American Coke Plates—Bessemer—

IC, 14 x 20 .....107 lb	$4.40
IX, 14 x 20	5.40

American Terne Plates—

IC, 20 x 28 with an 8 lb. coating	$8 50
IX, 20 x 28 with an 8 lb. coating	10.50

Bolts—

Carriage, Machine, &c.—

Common Carriage (cut thread):	
⅝ x 6 and smaller	70&7½%
Larger and longer	65&5%
Common Carriage (rolled thread):	
⅝ x 6, smaller ands horter	70&12½%
Phila. Eagle, $3.00 list	80&5&80&10%
Bolt ends with C. & T. Nuts	65&5%
Machine (Cut Thread):	
⅝ x 4 and smaller	70&12½%
Larger and longer	65&10%

Nuts

Blank or Tapped.

Cold Punched:	Off list.
Square	4.90¢
Hexagon	5.50¢
Square, C., T. & R.	5.30¢
Hexagon, C., T. & R.	6.10¢
Hot Pressed:	Off list.
Square	5.40¢
Hexagon	5.80¢

Seamless Brass Tubes—

List November 13, 1908. Base price 18¢

Brass Tubes, Iron Pipe Sizes—

List November 13, 1908. Base price 18¢

Copper Tubes—

List November 13, 1908. Base price 22¢

Brazed Brass Tubes—

List August 1, 1908. 20½¢ ₩ lb

High Brass Rods—

List August 1, 1908. 15½¢ ₩ lb

Roll and Sheet Brass—

List August 1, 1908. 15½¢ ₩ lb

Brass Wire—

List August 1, 1908. 15½¢ ₩ lb

Copper Wire—

Base Price. Carload lots mill 15¼¢

METALS—

Tin—

Straits Pig ₩ lb 36.50¢

Copper—

Lake Ingot	₩ lb 14¾@15 ¢
Electrolytic	₩ lb 14¾@15 ¢
Casting	₩ lb 14¼@14½¢

Sheet Copper Hot Rolled, 16 oz (quantity lots) ₩ lb 18 ¢
Sheet Copper Cold Rolled, 1¢ ₩ lb advance over Hot Rolled.
Sheet Copper Polished 20 in. wide and under, 1¢ ₩ square foot.
Sheet Copper Polished over 20 in. wide, 2¢ ₩ square foot.
Planished Copper, 1¢ ₩ square foot more than Polished.

Spelter—

Western ₩ lb 7¼@7¼¢

Zinc.

No 9, base, casks ₩ lb 8½¢ | Open ₩ lb 9¢

Lead.

American Pig	₩ lb 5½@5¾¢
Bar	₩ lb 6¾@6¾¢

Solder.

½ & ½, guaranteed	₩ lb 21½@22 ¢
No. 1	₩ lb 18½@19 ¢
Refined	₩ lb 16¾@17 ¢

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Cookson	₩ lb ..@10¢
Halletts	@10¢
Other Brands	@9½¢

Bismuth—

Per lb $2.00@$2.25

Aluminum—

No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting	24¢
Rods & Wire	Base Price 31¢
Sheets	Base Price 33¢

Old Metals.

Dealers' Purchasing Prices Paid in New York

	—Cents—
Copper, Heavy cut and crucible	₩ lb 11.50@11.75
Copper, Heavy and Wire	₩ lb 11.00@11.25
Copper, Light and Bottoms	₩ lb 10.00@10.25
Brass, Heavy	₩ lb 7.75@ 8.00
Brass, Light	₩ lb 6.50@ 6.75
Heavy Machine Composition	₩ lb 10.50@10.75
Clean Brass Turnings	₩ lb 7.50@ 7.75
Composition Turnings	₩ lb 8.50@ 8.75
Lead, Heavy	₩ lb ....@ 3.75
Lead Tea	₩ lb ....@ 3.50
Zinc Scrap	₩ lb ....@ 4.50

THE IRON AGE

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